"THE FAR EASTERN REVIEW" – CHINESE RAILWAY CONSTRUCTION

A COMPREHENSIVE STUDY OF HISTORICAL REFERENCES WITHIN THE LIFE OF THIS JOURNAL OF THE DEVELOPMENT & CONSTRUCTION OF CHINA'S EARLY RAILWAYS, INCLUDING EXTRACTS OF RELEVANT PAGES (**SECTION 5 of 14**)

BY PETER A. CRUSH

For Introduction please see preface to SECTION 1 covering Vols I - V

Summary of Chinese Railway Related Content

(**Note** : to view the relative pages of the magazine, scroll down to end of these notes for each volume, respectively)

Volume XV

January 1919

The Projected Chefoo-Weihsien Railway An editorial report on renewed agitation from Chinese merchants in Chefoo for the construction of this railway line which had been authorized in 1908. British merchants had first suggested a line as early as 1868.

The Nanking City Railway The editors complain about the "deplorable condition" of the railway.

international Politics in Chinese Railways A famous Japanese writer discusses the internationalisation of the politics of building China's railways.

S.M.R. Co. Rolling Stock Rolling stock figures for November.

For Improvement of S.M.R. Lines A huge new investment in rolling stock was to be made.

Peking Round City Railway The managers had proposed two new branch lines

Enterprises of the S.M.R. A brief description of other enterprises being conducted by the railway.

February 1919

Railways Serving the Ports of China A list and description of the railways which were serving eighteen of China's deep-water ports. 8 small photographs and 3 maps, including one depicting the projected Szechuan line to the east coast.

March 1919

Siberian Railway internationally Supervised A report that the America and their Japanese "allies" had reached an agreement over the management of the Russian Siberian railway management although the Chinese Eastern Railway management still depended on Chinese co-operation.

internationalization of China's Railways It was expected that the management of Chinese railways and their internationalization would be up for discussion in the forthcoming Paris Peace Conference.

Peking-Suiyuan Railway – Loan A loan of Yen 3 million had been granted.

Passenger Traffic figures on Chinese railways for 1916.

Nanchang-Kiukiang Railway The Chinese owners had secured a $1 million loan from Japanese creditors.

Locomotives for S.M.R. 17 new 'Mikado' type locomotives had been delivered to Dairen from USA.

C. E. Ry. Resumes Express Service Twice weekly services from Manchouli to Vladivostock had been resumed.

S.M.R. Budget The 1919 budget included Yen 35 million for new undertakings to increase traffic.

April 1919

Unification of Chinese Railways- How the political or commercial sphere of influence may be eliminated. A long editorial about the complexities of unifying control and sovereignty over Chinese railways because of the varying conditions imposed by foreign loans.

The Chefoo-Weihsien Railway Project A report that local agitation for building this railway was increasing. Also, a copy of telegram on this subject sent to the Peace Conference delegates in Paris.

Congestion of Cargo on S.M.R. Lines. A list of congestion points on the railway with the tonnage being held up.

Proposed Canton-Macao Railway A company had been provisionally registered for this projected line.

May 1919

The Late Jeme Tien-yu Report that Mr. Jeme Tien-yu had died at Hankow on April 24. He was one of China's most prominent engineers and students of modern progress. His most important work was the construction of the Peking-Kalgan Railway.

Chinese Railways in I918 Preliminary Official Report of 1917.

Statistics of Chinese Government Railways Final Report for the year 1916.

The Shantung Railways Agreement Text of an agreement for the construction of the railways from Tsinan (Shantung) to Shunteh (Chihli) and from Kaomi (Shantung) to Hsuchow, (Kiangsu).

The Siems-Carry Railway Agreements A recap of the various loan agreements negotiated back in 1916 by this American company.

German Interests in Chinese Railways Announcement that the Chinese government had cancelled all privileges granted to Germany under the Hu-Kuang Loan agreements.

New Locomotives [or S.M.R. Additional locomotives ordered from USA.

S.M.R. Co.'s Estimates for 1919 Estimates for the year approved by the Board.

S.-N. Railway Plans improvements were contemplated on the Shanghai-Nanking Railway.

June 1919

Dr.Sun Yat-sen's Program for the International Development of China

Text of a document by Sun outlining his port and railway development plans.
The Economic Rights Secured in Shantung by Japan Long documents (multiple headings) explaining the “rights” Japan had inherited by its defeat of Germany in Shantung Province including the railways therein.
Projected line to Haichow Further update on the survey being conducted for continuing the Lung-Hai Railway and connections.
Raising the Tsin-pu Line Railway embankments were to be raised because of previous flood damage.
Receipts of S.M.R Co. Financial figures for 1918.
Cable Railway for Kullng A cable car was being constructed to the summer resort of Kuling from Kiukiang (not actually a “railway”, as described)

July 1919
The Passive Revolution Photo of Tsao Ju-Lin, the Ex-Minister of Communications, who had been was driven from office by popular clamor as a traitor for being under Japanese influence.
Projected Russian Railways in North Manchuria Text of the agreement made between the Chinese Government and the Russo-Asiatic Bank for the Construction of Railways between Tsitsihar and Heiheilu, on the Amur River, and between Harbin and Morgen.
Kowloon-Canton Railway Report in the Hong Kong ‘Blue Book’ that the railway was paying its way.
The Lunghai Railway Report that Japanese engineers, employed by the Belgian contractor, had been conducted on the eastern extension.
Locomotives lor S.M.R. 31 new locomotives had been delivered from USA.
Congestion of Cargo on S.M.R. Lines. An updated list of congestion points on the railway with the tonnages being held up.
South Manchuria Railway Debentures Yen 20 million new debentures paying 6% had been issued.
Chinese Eastern Railway A threatened strike had been averted by large wage increases.

August 1919
The Great Need of Railroads. Editorial suggesting China needed one billion dollars worth of new railways , if freed fromn foreign bondage.
Projected Railway Through Kweichow Provivial officals were arguing they had the right to build this railway, not the Central government.
The Lung Yen Iron Mines The Managing Director of the Peking-Suiyuan Railway reveals the ownership/control over this mine.
The Canton-Kowloon Railway in I918 Financial report for the year of 1918.
South Manchuria Railway Dividend Profit report for the previous year and also the month of June 1919.
Through Traffic Arrangements in China A booklet had been published specifying the details of through ticket arrangements.

September 1919
A Year’s Working of China’s Railways A statistical report for 1917.
The Through Traffic Arrangements of the Chinese Government Railways A history of this subject and the new arrangements explained.
Japanese Claim More “Compensation” from China An explanation of the demands being made on China by Japanese militarists in Manchuria and Monglia , including in relation to railway ”rights”.

October 1919
Fom the Sublime to the Ridiculous Photograph of former ("Forney" type) locomotive which graced the Manhattan Elevated Railway.
Board Of Trade's Forecast The British board had forcast that 50,000 - 100,000 miles of railway line would be built in China over the following quarter century.

November 1919
The Development of China's Central Provinces – Article explaining the importance of the new Lung-Hai Railway. Photos along the proposed route and a few of bridges and one of Kwangyingtang station.
Culled from the Customs Reports A summary of reports of the various Commissioners of Customs for the year 1918. One section on railways.
Opening China's Great North West Article describing the economic possibilities brought by the Peking-Suiyuan Railway. 13 photographs (some of the railway)
The Canton-Shluchow Line Express trains were now running, taking 6 hours.
S. M. R. to Expand Enterprises The railway company was continuing to expand its commercial enterprises.
Far Eastern Railways and Markets A U.S Trade Commissioner discusses opportunities for railway expansion in China and the Far East.

December 1919
An Engineer's Journey Across Yunnan Author E. W Mills discusses the need for a Burmah to China railway.
The First Railway in China A short history of the aborted first Shanghai-Woosung railway. The pictures and text are largely reproduced from R C. Rapier's book , "Remunerative Railways for New Counries".
China's Through Traffic Arrangements An update on the September 1919 edition's report.
Chinese Railways in 1918 Final Official Report for 1917.

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SUPPLEMENT: CHINA'S REVISED TARIFF

FEB 17

THE FAR EASTERN REVIEW

FINANCE ENGINEERING COMMERCE

Across Little Known Yunnan

Reforms in Chinese Justice

Mr. Taylor and the Customs Service

The German Bank Scandal

上海仁記路第五號

遠東時報

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SHANGHAI, PEKING, TOKYO AND MANILA

The Projected Chefoo-Weihsien Railway

Renewed Agitation for Construction of a Railway Vital to the Future of Chefoo

Once again the proposal to construct a railway between the seaport of Chefoo and Weihsien is on the tapis. During the past few years a great deal has been said with regard to this project but so far nothing has been accomplished. Chinese merchants in Chefoo and cities which would be tapped by a railroad to Weihsien have from time to time held meetings and passed resolutions, and, it has been reported, have even collected funds towards construction expenses, but all in vain.

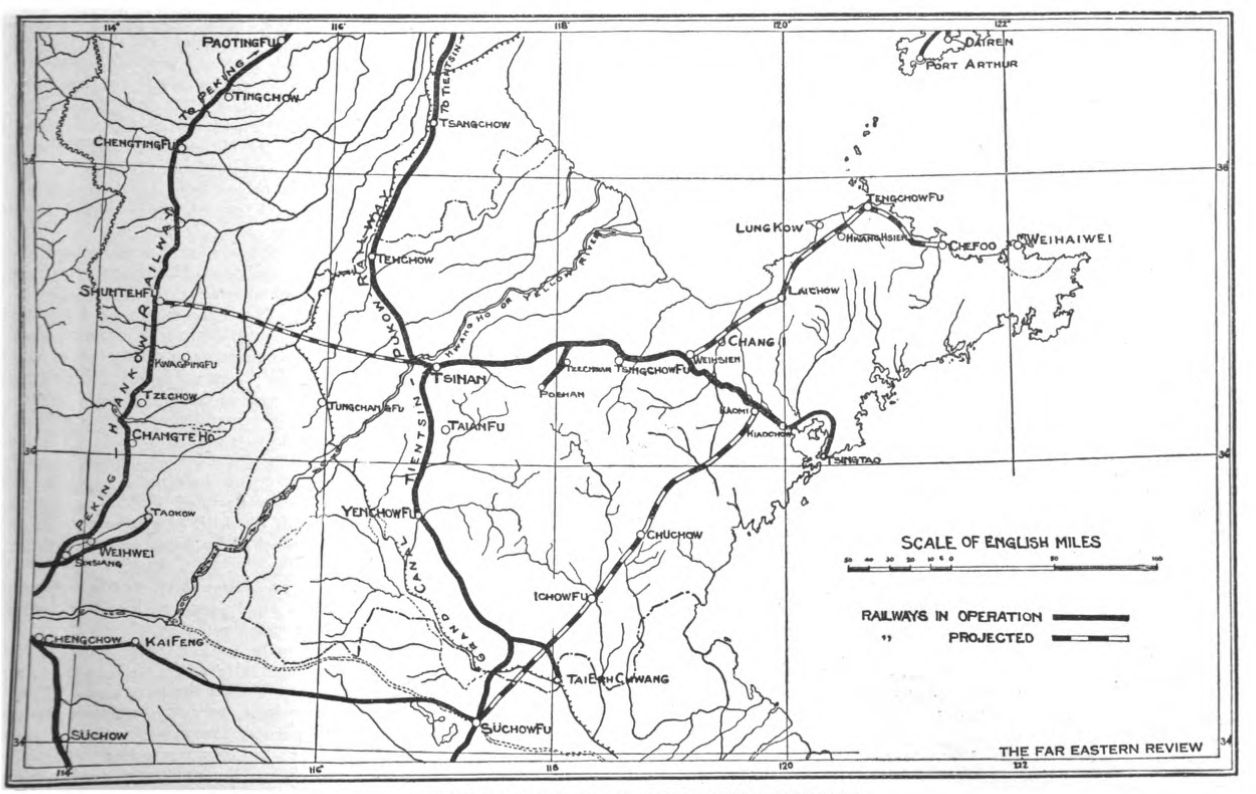
Now we have the Chinese of Chefoo once again moving On December 11 the Cabinet at Peking received a lengthy telegram from the Chinese Chamber of Commerce at that port explaining that slow progress in the consummation of the scheme has been due to the desire of the Ministry of Communications to build the railway, while at the same time it is burdened with other ambitious projects and has no recourse to the necessary funds to carry out any of them.

The Chamber of Commerce bluntly expresses the view that it is a waste of time to wait for the Government to construct the proposed line and suggests that the Government should now declare it a mercantile project and authorize the Chamber of Commerce to undertake construction work. The Chamber of Commerce declares its ability to raise the necessary capital from the merchants of Chefoo, Hwanghsien, Weihsien, Tsinanfu and other cities in Shantung Province, and promises promptly to proceed with arrangements for the project in order that construction may be begun at an early date. The Cabinet, after discussion, decided to pass the matter on to the Ministry of Communications for consideration, and for the time being it is believed in Peking that the request of the Chamber will be granted.

In 1908 sanction was given to the gentry and merchants of the districts to be traversed to raise funds for the construction of such a railway, but nothing came of the scheme although the merchants eventually applied to the Government at Peking for the registration of the Chefoo-Weihsien Railway Company, which they reported they had formed with a capital of Tls. 5,000,000.

In 1909 agitation was resumed, but once again died down without accomplishing anything material, failure to raise the necessary funds being primarily responsible.

In 1910 the persistent agitators believed that finances would be forthcoming, and the interest taken in the scheme by Mr. Sun Pau-chi, who was then Governor of Shantung, encouraged the



MAP OF RAILWAYS IN SHANTUNG PROVINCE

This map shows the projected railway from Chefoo to Weihsien and its relation to existing systems. The projected railways from Kaomi to Hsuchowfu (spelled on the plan Suchowfu), and Tsinan to Shuntehfu, which were the subject of an agreement recently secured by Japanese interests, are also shown.

promoters to endeavour to bring the project to completion. Mr. Sun Wen-chan, of Chefoo, a prominent advocate of the line, was invited to the seat of the Governor at Tsinanfu to discuss financial matters connected with the project, and he reported that of $3,000,000 necessary to construct a railway from Chefoo to Hwanghsien—part of the distance to Weihsien—$2,000,000 had already been signed for by various gentry. The Governor promptly replied that if $2,000,000 were actually ready the promoters could start work, stating that the remainder could be secured from the Bank of China, and he agreed to offer the necessary security to obtain the amount. When the Director returned to Chefoo a meeting was held and it was decided immediately to begin work on the first section, and to make efforts to secure the construction of the whole line to Weihsien.

The optimistic promoters, however, received another shock, and in due course their inability to raise the funds requisite for the work was brought home to them. Realization of this fact eventually constrained the Chinese Chamber of Commerce to reconsider their position, and at a meeting in September, 1910, it was agreed to prepare a memorandum to the Governor of Shantung frankly declaring the inability of the Chefoo merchants to finance the scheme. Action in this respect appears to have been delayed till May of 1911 when the Chinese Chamber of Commerce made representations to the Taotai at Chefoo praying, owing to adverse circumstances, for the conversion of the project from a commercial enterprise to a Government undertaking.

This suggestion did not apparently appeal to the Government and it seized the opportunity to excuse itself by taking the view that the line was a branch of the railway from Tsingtao to Tsinanfu and that branch lines were not to be built with capital of the Central Government but by local capital, or, if foreign capital were employed, by German money, in accordance with Article VII of the "Railway and Mining Concession" embodied in the Kiachow Convention, as follows:

> If at any time the Chinese should form schemes for the development of Shantung for the execution of which it is necessary to obtain foreign capital, the Chinese Government or whatever Chinese may be interested in such schemes shall in the first instance, apply to German capitalists. Application shall also be made to German manufacturers for the necessary machinery and materials before the manufacturers of any other power are approached. Should German capitalists or manufacturers decline to take up the business, the Chinese shall then be at liberty to obtain money and materials from other sources or other nationalities than Germans.

Any further immediate progress was arrested by the Revolution which broke out in October 1911 and resulted in the overthrow of the Manchus, and it was not till September, 1912, that consideration of the subject was revived, when a public meeting was convened by General Chu Tung-fung, the local Administrator at Chefoo. At this meeting a provisional committee of ways and means was formed, composed of twenty-six influential members of the Chinese mercantile committee.

It was then advocated that the line be constructed from Chefoo to Hwanghsien; thence to a point between Changi and Weihsien, and from there to Tehchow, on the Tientsin-Pukow Railway, it being contended that such a route would enjoy independence of the German Railway in Shantung, and would enable Chefoo to be in direct steam communication with all parts of China and Europe. The meeting declared its full recognition of the urgent need of railway communication, and its willingness that the required funds should be raised by the issue of shares and/or by means of a foreign loan. A summary of the proceedings was communicated by telegraph to the then President, Yuan Shih-kai; the Ministry of Posts and Communications; the Ministry of Finance; the Provincial Assembly of Shantung, and the Railway and Mining Bureau at Tsinanfu, and others. A joint reply was received from the Shantung Tutuh and the Provincial Assembly at Tsinanfu to the effect that they had endorsed the scheme in a telegram to the Board of Communications; but the Board threw cold water on the proposition by telegraphing a reply pointing out that the proposed line to Tehchow would necessitate another bridge over the Yellow River, which alone, it was estimated, would entail an expense of some Tls. 5,000,000. The Board, therefore, advised that some other route be carefully considered and that it be submitted with detailed information in regard to (*a*) the proposed methods of raising the required funds; (*b*) the estimated cost of the enterprise; (*c*) the draft of rules to apply to proposed operations in general. In consequence of this a survey of the route from Chefoo to Weihsien was made by Chinese engineers in the spring of 1913, and a plan, based on that survey, was submitted to Peking.

In August, 1913, the Government communicated to the Chinese Chamber of Commerce at Chefoo its recognition of the necessity for the construction of the line, and admitted recognition of the Government's obligation in this respect.

The Government, however, took no steps to bring the railway into being, despite the fact that the Chefoo promoters of the enterprise repeatedly applied to Peking urging the authorities to start the work. Internal difficulties, and the great shortage of money, were, of course, responsible for disinterestedness on the part of the Peking Government.

The agreement made by the Government with Germany for the construction of the Kaomi-Hsuchowfu and the Tsinan-Shuntehfu Railway naturally raised indignation among the Chefoo residents, and again strong agitation ensued for the construction of their line. Another petition was sent to the Capital imploring the Government to carry on the railway in order to arrest the gradual and marked decline in trade being suffered by Chefoo. The foreign Chamber of Commerce backed up the agitation of the Chinese by calling a meeting of foreign residents and property owners on April 21, 1914, and agreeing to despatch a memorial to the Diplomatic Corps at Peking urging the construction of the railway and a breakwater in the harbor. As a result of that memorial the construction of the breakwater was ultimately agreed upon, and has been under construction for some time. The railway, however, is no further advanced.

Germany, whose interests solely were concerned with the development of Tsingtao, naturally did not look with favor upon any scheme calculated to increase facilities for competition at Chefoo, and opposed the project as much as possible. The outbreak of war and the lack of funds enabled the Central Government to comply with Germany's pressure without offending the Chefoo Chinese, and the whole project, so far as the Government was concerned, was pigeon-holed. As Chefoo is the only port actually under control of China between Tientsin and Shanghai it stands to reason that its claims and commercial potentialities cannot continue to be neglected, and the agitation which has now been resumed is likely to continue until something is done to meet the wishes of those merchants who have maintained their stand at Chefoo for many years.

The opening to foreign trade of the port of Lungkow, which is opposite the important trading centre of Hwanghsien, is another factor urging the early construction of the projected railway. The district round about Hwanghsien is said to be one of the richest in Shantung. The population is estimated at over 80,000 people, many of the rich merchants being men who made their money in Manchuria in Russian times. Familiar with foreign methods as these men are, and consequently being progressive, they realize fully the tremendous influence rail communication would have upon their trade. As it is a large grain business is carried on with the rest of the province and the North, shipments coming and going by junk, mainly to Dalny, and Newchwang, through the port of Lungkow, some fifteen miles distant on the Gulf of Pechili. Lungkow is now being improved and can easily be reached by a branch line from Hwanghsien.

Commercially Hwanghsien is an important trade centre, apart from grain transactions, and largely handles silk, vermicelli, native sundries, piecegoods, and the cheap foreign manufactured articles which generally find a sale among the Chinese. The region is rich agriculturally and land values are said to be higher there than anywhere else in the province. Fruit of all kinds is grown, as well as wheat, millet, sorghum, beans and peanuts, the latter being planted very extensively and producing considerable oil. In foreign commerce the region is mainly noted for its strawbraid, being the northern end of the Laichowfu district. Formerly all the braid went to Chefoo, but except from the regions about Hwanghsien it now goes overland viâ Liachow, and Shaho to Changling on the Shantung Railway, and thence to Tsingtao.

The construction of the railway from Weihsien to Chefoo would naturally restore the strawbraid trade to the latter port,

and from other important places would carry silk and agricultural products. The whole country that would be traversed is well stocked with good cattle and unusually fine mules. Mule carts form the most common means of travel, the wealth of the people enabling them to pay this transportation in preference to the cheaper means in vogue elsewhere. The mules are a large-breed variety and sell from $200 to $300 each. It is estimated that as the railway would pass one of the richest parts in Shantung, enjoying a large native trade, it should be an assured success.

In connection with railway projects in Shantung and the claims made by various parties that they are entitled to concessions because of priority of application, it is interesting to recall the fact that a British firm established in Chefoo made application for the particular line in question as part of a greater scheme so long ago as 1868, repeating the application in 1875. Documents in connection with this early effort to have railways established have been kindly placed at our disposal by Dr. G. E. Morrison, Political Adviser to the President of China. These constitute an interesting addition to documents connected with the development of railway communication in China, and as such, and to establish the early activities of British merchants at Chefoo, we are glad to publish them. They are as follow:—

Old Appeal for Shantung Railway Concession

Copy of letter from Messrs. Fergusson & Co., British merchants, Chefoo, to Sir Rutherford Alcock, H.B.M.'s Minister, etc., at Peking:—

Chefoo, July 13, 1868.

SIR,—As long resident merchants at this port, and having a large and direct interest in the extension of trade with the interior of the Province of Shantung, we have now the honor to submit to your Excellency a proposal to construct a railroad between this and Tsinanfu, the capital city of this Province, as one of the chief means needed to facilitate our intercourse with the inland markets, and we humbly trust that your Excellency may be able to recommend its speedy adoption by the Chinese Government and that you may obtain for us the privilege of carrying this project into execution.

We consider that any lengthened statement of the advantages likely to accrue to British commerce from the adoption of our plan for the proposed railroad would be quite superfluous, as they seem to be now admitted by all who have turned their attention to the subject.

We will, therefore, proceed at once to explain the line of country which we entertain as the most desirable for the railroad, and to state what we desire to obtain in connection with the same as promoters of the undertaking.

The Eastern or Chefoo terminus of the road would require to be conveniently near the town of Yentai at this port.

From Yentai the road would run to Shanhyen, and from thence the stations would be as follows:—

Yentai, Feshanhyen, Tatsintien, Whanghyen, Perma, Hwongsanquong, Choucheaou, Laichoufoo, Sarhoa, Shinghoa, Change, Hanting, Weihyen, Changlao, Chingtsaofu, Lintze, Keelinchia, Changtien, Cheutsun, Changsan, Tseping, Changchew, Loongsan, Tsinanfoo.

(Here names are appended in Chinese characters).

We have written the names in Chinese for the sake of greater exactitude, and Your Excellency will perceive that including the two termini there are 24 important places to be linked together by this iron way. There are also some intermediate villages or towns which have not been mentioned where it might be desirable to have stations or short branch lines, and any such additions should form an external part of the proposed road.

The railroad at first to consist of single (line).

Having thus sketched out the route we propose for the iron way, we now beg leave to submit that we are quite prepared to find the capital required to construct this road provided we can obtain the necessary authority from the Chinese Government to do so and we confidently rely on Your Excellency's influential support to place our proposal in such a manner before the Chinese Government that they may be induced to confer upon us the power we require to carry it out. We feel sure that Your Excellency's knowledge of the importance of rapid communication between different parts of China will prompt you to advocate the construction of a railway through this rich province on the ground of its public utility to the Court of Peking, and moreover that viewing this affair from a Statesman's elevated point of view you will be able to discern higher reasons for this measure than we could possibly hope to do.

We content ourselves merely by stating that a line of railroad from Chefoo to Tsinanfu in conjunction with a railroad from Peking to that city would bring the Imperial capital into easy and quick communication with a good seaport all the year round and this circumstance would prove useful in many ways to the Chinese Government. We consider, therefore, that should we be permitted to carry out our project we should be the cause of great good, not only to British trade but the Government of this Empire.

We do not wish to conceal that the permission we seek for would benefit ourselves, but we submit that this result to our application would be a legitimate compensation for the trouble that we have had and shall bestow in bringing this matter to a conclusion.

We certainly ask for privileges and powers, but only for such as will bear fruit reciprocally to ourselves and others.

We now proceed to state what those powers and privileges are:—

We ask for the exclusive permission and right to construct at our own expense the railroad above described and to be the exclusive proprietors of the same. In order to do this we require from the Chinese Government a concession to acquire sufficient land for the railroad of 100 feet wide and for the stations and premises at the termini and the intermediate places on the line as may be deemed by us necessary for the successful working of the road.

In places where the road passes through common or untitled land we request a free gift of such land on our paying the annual land tax paid by the natives to the crown.

Where the land passes through private property we request the right to purchase so much of such land as we may require at a valuation placed by special Commissioners acting conjointly with us or our agents, and the land thus valued to be paid for with 80 per cent. of its value in money and the other 20 per cent. in the stock shares of the railroad at par. This latter we propose because it would interest the land holders on the line of road in its prosperity and safety.

We ask that all the iron rails and machines and sleepers and plant and locomotives and rolling stock to include all the material for constructing the railroad should be admitted free of duty for 5 years dating from its commencement. We ask leave to work the adjacent coal mines on such moderate terms that may offer an inducement to do so—say at paying a Royalty of 5 per cent. on the value of the product in lieu of all taxes and charges for so doing.

We ask that in lieu of all taxes on the railroad a payment of 5 per cent. on the net profit of the railroad should be accepted.

We ask that no taxes should be levied or collected on any goods or passengers in transit during their passage through any part of the road.

We ask that the Chinese Government protect by their Authority the construction and maintenance of the road and all its appurtenances. We further ask that we are to have the power to associate with ourselves other persons and form a company for the purpose of making and working and owning the road, and that such company be considered as, and have all the privileges of a Chartered Corporation. We ask for the right of quarrying and using all the stone required within 8 years from the same date; this condition to be dependant on the construction of the road not being impeded or destroyed or injured by rebels or popular tumults.

In conclusion we beg to assure Your Excellency that should the above privileges be accorded to us we will do all in our power to conduct the whole enterprise most peacefully and in accordance with any conditions that Your Excellency may wish on the part of Her Majesty's Government, and in submission to the Authority of Her Majesty's representative in China.

We have the honour to be,
Sir,
Your Excellency's most obedient humble servants,

(Signed) FERGUSSON & Co.

Copy of letter from Fergusson & Co., British Merchants, Chefoo, to T. F. Wade, Esq., C.B. etc., H.B.M. Minister, Peking.

Chefoo, 4th November, 1875.

SIR,—We now desire to submit to your Excellency a proposal for constructing a railroad from the Port of Chefoo to Tsinanfu, and thence to Tientsin and Peking, and we beg respectfully that you will lay it before the Chinese Authorities for their consideration and should it meet with their approbation that you will endeavor to obtain their permission for us to carry out the project. The principal motive for our desiring to get the proposed railroad constructed, is, to obtain greater facilities of communication with the interior of this province and the North of China, and thereby an increase of our commerce (which chiefly consists in the import of British manufactures), and the extension of British trade in this portion of the Empire.

While, however, seeking our own interest and those of the British trade generally in this proposal, we feel confident that if realized it would be most beneficial to the Chinese Government and people, and consequently be worthy of its attention; but we do not venture to lay any stress on the advantages that would therefrom accrue to the Chinese Government beyond submitting that permission to construct the road would result in its own benefit as well as in that of British trade.

We are ready to carry out the project of constructing the railroad either by:—(1) Advancing the cost of the road as a loan to the Chinese Government on its guarantee and security of the road for the repayment of the amount, with a certain interest on the capital required for the same,

and with a contract to construct the road at so much a mile for account of the Chinese Government, or to construct it according to our Engineers' plan under their direction, or (2) By constructing the road on account of ourselves and our friends in England, with a reservation of a right to the Chinese Government of purchasing the road from us after a stated time and on terms to be agreed on, or without such reservation as might be more agreeable to them. In case of contracting to build the road for the Chinese Government we should not include the price of the land that the road would be built upon, but we shall merely ask to appropriate the land required for the purpose as we might point out, but in case we constructed the road for our own account and of our friends as above mentioned, we would ask to have the price of the land settled beforehand, with the necessary permission to take possession of the same. As, however, it would be more expedient to pay the owners of land for the ground the road would occupy, even in case the road were built for account of the Chinese Government we would advance the price of the land together with the cost of the road as before mentioned.

The price at which we would contract to build and equip the road (exclusive of the cost of land) would be Tls. 24,500 of Chefoo sycee per mile from Chefoo to Tsinanfu, and the same rate from Tsinanfu to Tientsin and Peking, with the exceptions to be presently mentioned. This price would include a single main line laid with 40 lb. iron rails to the yard on wooden sleepers 6 feet long, with the necessary rail at stations; all stations for ordinary requirements, locomotives and sufficient rolling stock of carriages and waggons to meet the ordinary traffic; workshops with engine houses, offices and furniture; electric telegraph for use of line, and every material required to put the road in complete working order.

The bridging of the Yellow River for the line from Tsinanfu to Tientsin cannot be estimated at present, and would not be included in above proposal, but we would undertake to construct the bridge and river embankments required for its safety on reasonable terms, when the exact locality for crossing that river be decided.

As the line of road from Tsinanfu to Tientsin and Peking would require for its stability that the rivers flowing from the westward which have so often inundated large portions of the province of Chihli should be dredged, and other measures adopted for carrying off the superabundant waters, the estimated cost of constructing the road already mentioned would be exclusive of such dredging and other precautionary measures for preserving the road from the evil effects of the inundations.

We shall be quite prepared to hand in estimates for all the above mentioned works, if the Chinese Government accede to our proposal, and to undertake them at a reasonable price. The estimated cost of the road would be exclusive of the free use of quarries of stone and earth, uncultivated land adjacent to the line of road, for the purpose of building and ballasting same, which we would ask the Chinese Government to concede us together with the permission to construct the road.

The quantity of land required for the road would be 85 mow per mile inclusive of stations at about every 5 miles if required. The main road as far as Tsinanfu would pass through or near the places mentioned in subjoined document A, but we would connect the main line with any other places adjacent to it which the Chinese Government might indicate and we would ask permissino to construct branch lines to the coal mines at Weihyen, Pesanyuen and other places along the road which might be deemed desirable. From Tsinanfu to Tientsin the proposed road would pass through or near the places mentioned in subjoined document B. with such deviation as might suit the Chinese Government if conformable to the Engineers' plan for the safety of the road.

The road would join the Grand Canal at Teichou and should the Chinese Government wish it to proceed northward to Tientsin by way of Hokienfoo and Senchow it would go from that last named place to Tientsin. But should the Chinese Government allow the road to be built on the bank of the Grand Canal, it would pass its east bank the whole length of its course to Tientsin direct. From Tientsin to Peking the proposed road would pass through or near the places mentioned in subjoined document C., or by any other feasible route adjacent to this line which the Chinese Government might point out. In case the Chinese Government grant us permission to build the road for our own account we would contract to make a special tariff for the conveyance of all Government officials and troops and stores and mails. The station masters and local engineers in the first instance would be British subjects until the road was either purchased by China as above mentioned, or its cost refunded to us should they decide to construct it by capital loaned to them, but in due course we propose that natives who have passed examinations to qualify them for the employment should be appointed to those posts, on nomination by the Chinese Government. In our estimate of the cost of the road we cover the amount of duty payable on the material, and we have done so as we think any request to be exempted from such duty might cause the provincial authorities to oppose the project while the knowledge that it would add to the customs revenue might facilitate their support of it. In case the Chinese Authorities approve of our proposal, and grant us permission to build the road, and there be any other matter connected with it which has not been here mentioned, we shall be quite ready to submit further proposals or modifications of our plans which might be required to carry out the affair successfully.

We have the honour to be,
etc., etc., etc.,

(Signed) FERGUSSON & Co.

P.S.—Instead of documents A., B. and C. mentioned in the body of above letter we send herewith a map of the country between this port and Peking with the proposed railroad marked on it in red ink and it marks the principal places the road would pass through.

F. & Co.

Motor Boats and Marine Machinery in Siam

[BY VICE-CONSUL CARL C. HANSEN, BANGKOK.]

The number of motor boats imported into Siam for the past four years has been comparatively small, owing to the fact that small crafts of that kind are usually built in the local yards, teakwood, which is abundant in this country, furnishing the construction material. On the other hand, fittings and machinery, not being manufactured here, necessarily must come from abroad.

Marine motors of all sorts are classified by the Siamese customs under the head of marine engines, and the available statistics for the four years ended March 31, 1917, show that 130 engines, valued at $110,801, were landed at the port of Bangkok in 1913-14; 93 engines, valued at $48,844, in 1914-15; 112 engines, valued at $30.650, in 1915-16; and 221 engines, valued at $78,733, in 1916-17. Of the total number of engines imported during the four years under review, the United States supplied 3, 16, 68, and 161 engines, respectively, and most, if not all, of these were attachable rowboat motors, the demand for which has been greatly augmented lately. The number of licensed motor boats in Bangkok probably reaches about 1,500.

The present demand for marine motors in this district is greater than the supply on hand, and the indications are that a great number of the small type of motor engines will be needed within the next few years to supply the motive power for most of the thousands of light craft that ply on the numerous waterways of Bangkok and its district and for the fishing boats that operate in the Gulf of Siam.

Equipment and accessories for motor boats are likewise not manufactured in this country, and, as all the available stocks are now being rapidly exhausted, there will be a ready market here for such articles after the war. It would seem advisable for American manufacturers to open up business connections with Bangkok importers as soon as possible and ascertain what class of articles are most likely to be in immediate demand when shipping activities are resumed again under normal conditions as before the war.

Effect of War on Chungking's Export of Bristles

(BY U. S. CONSUL G. C. HANSON, CHUNGKING.)

Bristles have been exported from Chungking in considerable quantities for many years, and just prior to the outbreak of the war in Europe the trade was increasing to a gratifying extent, the export of 21,359 hundredweight of 100 pounds each in 1914 being the record. The export totals for the last five years follow: 1913, 20,473 hundredweight; 1914, 21,359; 1915, 21,271; 1916, 16,235; and 1917, 15,652 hundredweight.

It will be seen that as the war progressed, exports of bristles declined. Besides the obstacles encountered in attempting to secure ocean shipping space and the disappearance of the German market, factors that had a bad effect on the trade, internal political troubles, and brigandage largely prevented, in 1916 and 1917, shipments of unprepared bristles from interior points to Chungking, where they are dressed for the foreign market.

There are a number of establishments in Chungking where bristles are prepared for direct export under foreign supervision. Bristles are one of the few exports that are shipped direct from Chungking abroad.

cold-blooded *coup de pied* properly administered. What is wanted is the man with the big enough brain, heart, and boot to carry out the requisite operation.

There are, however, many officials who know what is at fault in this country and who strive against the most discouraging conditions to do helpful work. Note the other article in this issue on the educative campaign being carried on by the Managing Director of the Peking-Hankow Railway—Dr. C. C. Wang; the efforts started by Mr. Yih Kung-cho, when he was vice-Minister of Communications, to open up Inner Mongolia by motor services, and construct roads elsewhere; the excellent beginnings made by Mr. Chow Tze-chi, when a Cabinet Minister, in the establishment of a forestry service, a department to better the production of China tea, the erection of mills, and the inauguration of other enterprises; the important municipal improvements effected by Mr. Chu Chih-chen at Peking when Minister of the Interior; the splendid industrial work carried out by Mr. Chang Chien—and no one official has done more than he; the cotton mills, and other industries encouraged by Mr. Chow Hsueh-chi, one-time Minister of Finance; and the work of many others who strive against great odds to establish factories and better living conditions. The difficulty confronting these men is that they have not the power, or had not the power when in office, to overturn "olo custom." A decided course of action must be laid down by patriotic men, and the chief plank should be to abolish the squeezing official at all costs. The hopeful feature of the situation is that the men who realize the great value of industrial development are likely very soon to be able to exert definite influence, and to this end the Allies should do their best to render assistance.

After the above was written another Mandate was issued by the President exhorting high officials to "educate the people and provide them with means of livelihood." Allusion was made to the good work done by Tuchun Yen, in Shansi Province, and the suppression of brigandage in Fengtien and Honan Provinces. "The good results thus produced are evident," added the President, and after urging that none but good officials be appointed and that persons should be "selected for the localities and not localities for the persons," he ordered that "the virtuous and competent should be duly promoted and rewarded and the corrupt and incompetent should be singled out and duly punished."

A Use for Chinese Soldiers

The suggestion in our last issue as to the utilization of Chinese soldiers for the execution of public works is regarded by responsible people as worthy of serious consideration. It provides a solution for many difficulties, and has the advantage over all other methods that the results will have a financial value. The Chinese army has shown its poor worth both in Siberia and in the civil war. In various places in China the soldiers are an absolute pest and are ruining trade by unwarrantably interfering with communications. Unless something is done, revolution of a Bolshevik type is almost certain to occur.

The remedy is probably along some such lines as the following. From the whole army as it is, by selection of the best officers and soldiers, a small but efficient army should be formed with uniform equipment. This would be ample to cope with all internal trouble, and the country could afford to keep it in good shape. The remainder should then be formed into labor corps, and, in conjunction with the Ministry of Communications, be set to navvy work. Members of the labor corps returning from France would be very useful as foremen and have the necessary military training for proper co-operation. An opportunity would also be afforded of employing the very numerous Chinese engineering students. Provided a certain amount of common sense is used, the ex-soldiers could be employed even on foreign controlled railway construction. In any case, the so-called main roads should be put into repair. The maintenance and improvement of the river dykes in Kwangtung, Honan, Shantung and Chihli also provides enormous opportunities for the immediate adoption of this expedient.

An example of what can be done in this way is seen in the road now almost completed between Shanghai and Woosung. Such a road has long been desired especially by the motorists, and for several years past the Whangpoo Conservancy Board, in virtue of its interest in the dyke, has been endeavoring to make arrangements for a road to be built on it. Eventually this year General Lu, in conjunction with Mr. Tsao Lu-ping, of the Works, Police and Tax Bureau of Northern Shanghai (Chapei), having the promise of financial assistance from the Conservancy Board and the Automobile Association, started operations. Over 1,000 soldier navvies were employed, and the earthwork is already practically complete. Two concrete bridges are being built by contractors under the superintendence of the Whangpoo Conservancy engineers, and in a few months this road will probably be open to traffic.

In this way the ennui, inefficiency, truculence and economic disabilities of the Chinese soldier can be entirely transferred into productive results, which will benefit all parties. No one will lose any "face," and, with proper care, the extra expenditure involved will be balanced by a reduction of the strictly military expenses and the increased income due to improved facilities for communication.

The Nanking City Railway

On a recent visit to Nanking we had occasion to note the deplorable condition of the railway which runs from the terminal of the Shanghai-Nanking Railway at Shiakwan into the city of Nanking, and known as the Nanking City Railway. The station houses are in a deplorable state of disrepair, the station yards are untidy and neglected, and all property is sadly in need of paint. The safety of the travelling public is entirely disregarded judging by the condition of the permanent way. Where the greatest care and vigilance should be shown in railway maintenance practically none has been deigned the track or equipment of this particular line. The ballast is badly boxed, the track is a weed garden in parts, spikes are missing in many places from the rails, and sleepers are in very bad condition, many being split and others twisted and warped. In short the line is in a dangerous state of disrepair. It is remarkable that serious accidents have not taken place up-to-date but it is certain that unless attention is given immediately to the condition of affairs costly trouble if not loss of life will be the result.

It is unfair to use this illustration of bad management in condemnation of Chinese control of such modern services as railways, but considering that the well managed Shanghai-Nanking Railway is a standing example of what ought to be done, and is daily within range of the vision of those who draw pay to manage the short spur line, one can be pardoned for thinking that the Chinese character or understanding of what is due the public who entrust themselves to their safe keeping is deficient in those qualities which make the European successful in the management of important public services. Some change is called for on the Nanking City Railway, at all events, and the sooner the conduct of the line is rigorously inquired into the better. If the officials at Nanking are wise they will immediately invoke the aid of foreign railway experts to put their line in order and make it safe for use, and take steps to see to it that the officials who have been entrusted with the control and care of the line are replaced by others competent to do the work and conscientious enough to realize their responsibilities towards the travelling public. The Chinese have to remember that it is by little things like these that they are judged, and if critics condemn them as incompetent to manage large affairs they have none but themselves to blame.

Shanghai Coal Scandal

The coal situation in Shanghai this winter is acute, and with the beginning of the season of bitter cold when artificial heat is one of the absolute necessities of life the high price of fuel will be a cruel burden upon the thousands of foreigners of moderate

for a reconciliation and re-union which will enable the Chinese nation to bear the more worthily of its own traditions its part in the reconstruction which the nations of the world are now hoping to attain."

The immediate effect of this demarche on the part of the Powers was to chasten the Tuchuns who were congregated in Peking. Most of them promptly left for their various headquarters, though it is believed that their departure from the Capital was prompted as much by the vision of an empty treasury, the Japanese Government having almost simultaneously issued a statement that no further loans would be made for the indiscriminate use of the Government. In view of the large number of loans previously made by Japan, the decision to put the stopper on was somewhat belated, but nevertheless it may be effective in compelling the militarists to unbuckle their armor. The Japanese decision was published in Tokyo on December 3 as follows:

"Mischievous reports of Japanese activities in China more particularly with regard to the granting of loans have for some time past been in circulation and have imputed to the Japanese Government intentions which are entirely foreign to them. For obvious reasons the Japanese Government cannot undertake to discourage financial and economic enterprises of their nationals in China so long as those enterprises are the natural and legitimate outgrowth of special relations between the two neighboring and friendly nations. Nor are the Japanese Government at all receding from their readiness to render needed financial assistance to China consistently with the terms of all the declarations and engagements to which they are a party, should the general security and welfare of China call for such assistance. At the same time they fully realize that loans supplied to China under the existing conditions of domestic strife in that country are liable to create misunderstandings on the part of either of the contending factions and to interfere with the restablishment of peace and unity in China so essential to her own interests as well as to the interests of foreign Powers. Accordingly the Japanese Government have decided to withhold such financial assistance to China as is likely in their opinion to add to the complications of her internal situation, believing that this policy will be cordially participated in by all the powers interested in China.

But since the communication of the above documents the various military leaders have had time to collect their wits, and apparently they have determined not to abandon their struggle for supremacy. General Li Shun has consistently worked for peace and the abolition of the Tuchunate, but he has support from no other military quarter in this regard. Even some of the southern leaders have told their following that the Tuchun must not be opposed with the idea of completely ousting him—this, notwithstanding the fact that the excuse for the fighting of the past year or so has been the necessity and desirability of the overthrow of the northern militarists—so it would seem that the Tuchuns have been able to make a convert or two in the ranks of the avowed enemy. What it all means the man in the street is unable to say, but it seems fairly certain that the Tuchuns of the south are with their brothers of the north in resisting a nationalization of the army and the abolition of individual commands. This is the very thing that will have to be effected if permanent peace is to be established in China, and it is something to which the Allied Powers will have to give undivided attention. At the very least the Powers must insist that any peace conference will be free from military influence of the kind which the northern Tuchuns wish to exercise, and to this end they ought to take the first opportunity of expressing their views.

In order to make its position clear the Peking Government issued a statement on December 21, which was summarized in a telegram by Reuter's correspondent as follows: The Government has issued a statement defending its action during the negotiations for peace with the South during the past several weeks. Telegrams exchanged between the North and South, with direct textual references, are published with the statement, which sets forth seven allegations defending the action it has taken and condemning the attitude of the Southern leaders. It first refers to the mandate of November 16, suspending hostilities; second, deals with the Southern telegram demanding equal representation at the forthcoming conference, to which request the North conceded; third, the Peking Government offered to compromise on the name to be given the meeting and agreed that the conference should take its name from the place of meeting.

The fourth clause argues for the selection of Nanking as the seat of the Conference, setting forth that the matter should be settled on purely Chinese territory rather than at Shanghai. The Government also suggests that Nanking should be selected because Li Shun's activities as a mediator have been ignored.

The Peking Government resents the accusations that peace overtures come from the North while it is actually conducting war operations and in the fifth clause points out that brigandage actually flourishes in Fukien and Shensi, thus defending the sending of Northern troops to quell the trouble in these provinces. The document refers to reports from Szechuan indicating that Southern commanders are advancing on Paochen and Nanchen, proving that the South is talking peace while actually waging war.

The Southern claim for joint delegates to the European Peace Conference is termed unreasonable because such a delegation would nullify the Chinese representation, says the sixth clause. That the Peking delegates to the domestic conference have already been appointed while the Southern representatives have not been appointed and the South ignores telegrams requesting action, thus making it impossible to know whether or not the South sincerely desires peace, is the last contention.

International Politics in Chinese Railways

In the course of an article by Marquis Komura, son of the late Foreign Minister of Japan, translated by the *Herald of Asia*, the writer states that "there is an astonishing heap of questions in China of tremendous importance to be solved. Take the railway problem, for instance. There are 4,975 miles to be built at a total outlay of Yen 660,000,000, for which contracts have already been signed by England, France, Russia and Belgium, though no actual advance of money has yet been made. Then Yen 400,000,000 has already been advanced on various other railways, while there are still many other lines under negotiations between China, and England, France, and America. How are funds to be furnished for these railways? What political and economic changes will not take place internationally on the morrow of their completion! What will be their effect on Chinese thought and civilization? Do the people here realize the real meaning of these questions? This policy of railway loans is the latest form, which international politico-economic exploitation of China—that saw its beginning at the close of Japanese-Chinese war—has taken for the establishment of interests of different Powers in China. In short the railway question in China is in truth one of international politics, the like of which is found nowhere else."

Japan and Loans to China

In connection with Japan's statement laying it down that no further loans of a political character are to be made to China until peace has been restored in the country Viscount Uchida, the Japanese Minister of Foreign Affairs, took occasion on December 20, when addressing the House of Peers, to emphasize the necessity of unity in China, and the determination of the Government to discriminate most carefully between economic and political loans. While the Minister did not lay before the House the steps to be taken the following notification of policy previously issued will be strictly enforced:—

1.—Those investors intending to advance a loan or open similar negotiations with the government authorities in China or Siberia, whether it be with those of the central government or of the local, which is likely or possible to be used for political expenditure, are required to report the same either to the Foreign Office, or to the diplomatic representative or consul of the Imperial Government.

On receipt of such report the authorities of the Foreign Office on consultation with those of the Finance Department and other offices as it may be necessary will give them the necessary guidance.

2.—Those investors who are not asking for such guidance or are actually in course of negotiation contrary to this instruction may not receive the protection of the Government.

3.—According to the nature of the question at issue or the degree of progress of the negotiations, the authorities of the Finance Department or those of other offices as it may be necessary, may be made to confer directly with the investors.

Mr. Chokai Okabe, a secretary of the Foreign Office, has been appointed to look after the loans to be made to China, and Mr Shigeru Nagai, another secretary of the Foreign Office as well as of the Finance Department, to look after loans to be made to Siberia. Hereafter, any Japanese capitalists who want to invest in those countries are expected to consult with these officials before taking any definite action.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Shanghai Tramways.—The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for the week ended December 4th, 1918, with figures for the corresponding week last year :—

	1918.
Gross Receipts	$35,754.55
Loss by currency depreciation ...	8,307.09
Effective Receipts	$27,447.76
Percentage of loss by currency depreciation	24.44
Car Miles run	79,839
Passengers Carried	1,639,880
	1917
Gross Receipts	$31,732.11
Loss by currency depreciation ...	6,825.05
Effective Receipts	24,907.06
Percentage of loss by currency depreciation	22.71
Car Miles run	74,903
Passengers Carried	1,445,742

For the week ended December 11th, 1918 :—

	1918.
Gross Receipts	$32,337.51
Loss by currency depreciation ..	7,514.57
Effective Receipts	$24,822.94
Percentage of loss by currency depreciation	24.59
Car Miles run	76.586
Passengers Carried	1,476,749
	1917
Gross Receipts	$30,995.24
Loss by currency depreciation ...	6,703.29
Effective Receipts	$24,291.95
Percentage of loss by currency depreciation	22.89
Car Miles run	76.165
Passengers Carried	1,418,069

For the week ended December 18th, 1918 :—

	1918.
Gross Receipts	$32,787.38
Loss by currency depreciation ...	7,618.33
Effective Receipts	$25,169.00
Percentage of loss by currency depreciation	24.60
Car Miles run	76.901
Passengers Carried	1,492,801
	1917
Gross Receipts	$30,966.54
Loss by currency depreciation ...	6,643.77
Effective Receipts	$24,322.77
Percentage of loss by currency depreciation	22.73
Car Miles run	73,622
Passengers Carried	1,409,148

Receipts of Korean Railways.—The total receipts of the railways in Korea during November amounted to Y.699,042 in passenger fares and Y.664,237 in freight, making a total of Y.1,353,279. This is an increase of Y.359,474 over the figures for the same period last year.

The Japanese Government Railways Bureau has decided to inaugurate a new system of freight transportation on January 19, 1919, which guarantees the delivery within a fixed period of time of all commodities consigned.

Management of Siberian Railways by Japan and U.S.—The negotiations between Japan and the United States re the management of the Siberian Railways have been in progress and an understanding thereanent seems to have been reached between the two Powers of late. It is said that in the event of order being restored in Siberia, the sphere of influence of both Powers will be defined, subject to the concurrence of the Powers, and that the Amur and Ussuri Railways will be included in the Japanese sphere of influence, and the Chinese Eastern Railway in the U.S. sphere, with the reservation that the Railway will be neutralized permanently.

S.M.R. Co. Rolling Stock.—According to the figures at the end of November, the South Manchuria Railway Co. had the following rolling stock :—Freight cars, 3,600; Passenger cars, 240; Locomotives, 266; Converted cars, 139. Total, 4,245. There are about two hundred freight cars under construction, and a number of locomotives ordered from the United States are expected shortly.

For Improvement of S.M.R. Lines.—The South Manchuria Railway Co. is planning a gigantic improvement in the traffic service of its lines, and especially in reinforcing its rolling stock. For the fiscal year of 1918, Y.10,000,000 was appropriated for the increase of the rolling stock, but in 1919 Y.23,000,000 will be spent in building locomotives and passenger and freight cars. Y.1,000,000 will be also spent in the improvement of tracks.

Shimonoseki-Moji Tunnel Decided On.—The Imperial Japanese Railway Bureau has decided to build the channel-tunnel between Shimonoseki and Moji, which connects Honshu and Kyushu. Construction work is expected to start next year and will be completed in 5 years. According to Mr. Satake, Director of the Bureau of Supervision, the total length of the undersea rail will be approximately 5 miles.

Peking Round City Railway.—The management of the Peking Round City Railway proposes to build two branch lines from the Anting Gate of Peking to Peiyuan, and from the Hsichih Gate to Hsiyuan, respectively. The Peking-Suiyuan Railway Administration, under whose control the round city line is placed, has submitted a memorandum on the subject to the Ministry of Communications. Work will commence as soon as permission is obtained from the Ministry. The branch lines will be known as the Chin-Yuan Branch Railways.

MINING

Kailan Mining Administration.—The total output of the Administration's mines for the week ended 23rd November amounted to 68,205 tons, and the sales during the same period, to 57,057 tons; for the week ended 30th November the output amounted to 72,610 tons, and the sales during the same period, to 62,170 tons; for the week ended 7th December the output amounted to 74,400 tons, and the sales during the same period, to 58,067 tons; for the week ended 14th December the output amounted to 70,290 tons, and the sales during the same period, to 62,820 tons.

The Seoul Mining Company.—During the month of November the mills on the Suan Concession crushed a total of 15,950 tons of ore resulting in a gross recovery of Yen 215,332. The Tulmichung mine developments continue most satisfactorily and the new ore bodies recently discovered are being opened up as quickly as circumstances permit.

INDUSTRIES

Tan-Hua Match Company.—The Tan-Feng Match Company of Peking, started by Mr. Chow Tsz-chi in 1912, obtained from the Government the exclusive manufacturing right in Peking for a stated number of years, during which period no other company can be started in the Capital for the manufacture of matches. Last Spring this company was merged into the Hua-Chang Match Company of Tientsin, and a new company on a bigger scale was organized which is known as the Tan-Hua Company. At a shareholders' meeting, Mr. Chang Sing-wu, formerly Councillor of the Ministry of Agriculture and Commerce, was elected Managing Director of the Company. Mr. Chang Sing-wu is now negotiating with the Government for the transfer of the exclusive manufacturing right of the Tan-Feng Company to the new company, so that the latter may continue to enjoy the right for the unexpired term.

Sino-Japanese Timber Co.—A lumber company with a capital of Y.5,000,000 is reported to have been organized at Chungchun at the joint initiation of Baron K. Okura and Mr. Chou-tzuchi. The company plans to handle the lumber of the Sungari district.

Manchuria-Mongolia Woolen Manufacturing Co.—The subscriptions to the shares of the Manchuria-Mongolia Woolen Manufacturing Company reached 860,000 shares against 15,000 shares offered. It has been decided that one-third of the shares offered will be allotted to the Manchurian subscribers.

Motor Bus Service from Sheungshui.—Some enterprising Chinese has just started a motor bus service from Sheungshui, in the New Territories (Hongkong), to Autau, this mark-

ing a great improvement on the means of communication hitherto available, prehistoric gharries and antiquated rickshas.

New Siberian Syndicate.—The Eastern Industrial Corporation (Kyokuto Kogyo Dan) has been organized in Japan as the result of tre investigations of the Economic Assistance for Siberia Committee for the purpose of systematically supplying goods to the Siberians.

Beet Sugar Factories.—The success of beet cultivation in Manchuria is inducing many sugar manufacturing companies to undertake beet cultivation in Manchuria. The South Manchuria Sugar Refining Company, Moukden, has harvested a far larger quantity of beets this year, and the Company is said to have had a very profitable year. The Company will increase the area of beet cultivation and annual productions. The Imperial Sugar Refining Company of Formosa is also planning to operate in South Manchuria.

Enterprises of the S.M.R.—The South Manchuria Railway Co., in addition to the many industrial and other enterprises conducted under Government orders, inclusive of railway and steamship transportation, warehousing, hostelry, gas, electricity, coal mining and sales and sundry auxiliary enterprises at the Fushun Collieries, management of the South Manchuria Railway Area with hospitals, schools, etc., are now interested in eighteen other corporations to the total extent of Y12,000,000, as are tabulated under :—

Electricity Works.—At Wafangtien, Tashihchiao, Ssupingkai, Kungchuling, Yingkou, Liaoyang, and Tiehling.

Market Places.—At Fushun, Moukden, and Changchun.

Exchanges.—At Changchun and Kaiyuan.

Industrial Enterprises.—Dairen Oil and Fat Industry Co., Harbin Flour Mill, and South Manchuria Development Co.

Mining.—South Manchuria Mining Co.

Communications.—Penchihu Light Rail Co., Changchun Transportation Co., and Dairen Steamship Co.

Warehousing.—Kirin Warehousing Co.

With the recent reorganization of the S.M.R. Co. staff, the different business companies in which the Railway Company is interested, have been placed under respective Departments as under :—

Under Land Department.—Yingkou Waterworks and Electricity Co. ; Dairen Oil and Fat Industry Co. ; Penchihu-Chienchang Light Railway Co. ; Changchun Exchange ; Kaiyuan Exchange ; Electric Light Companies at Liaoyang, Tiehling, Wafangtien, Tashihchiao, Kungchuling, and Ssupingkai ; North Manchuria Flour Mill ; Changchun Market Place ; Moukden Market Place ; South Manchuria Sugar Refining Co. ; South Manchuria Development Co.

Under S.M.R. Co. Dairen Railway Office.—Dairen Steamship Co. ; Changchun Forwarding Co.

Under Mining Department.—Chenhsing Mining Co. (connected with Anshan Steel Works).

The Niigata Iron Works has just purchased the patent owned by a British machine works of manufacturing Diesel engines. The company is raising the funds required for the buildings of works for Diesel engines and other internal combustion engines through the issue of new shares representing Y.3 000,000.

Crude lacquer had been imported by Japan from China to the value of Y.1,100,000 up to the close of November whereas before the war an annual import was only Y.670,000. The best grade is now quoted at Tls. 90 per picul. The lowest grade is quoted at Tls. 60 per picul.

Chihli Laboratory to be Extended.—The Provincial Assembly of Chihli passed a resolution whereby some $120,000 was appropriated for the extension of the Chihli Industrial Laboratory. The analytical department is equipped to handle chemical analysis of various ores, food, water and medicine. The other two departments are devoted to the experiments of different industries, such as leather, paper, pottery, etc.

Cocoanut Oil.—The little barrio of Recodo on the shores of Caldera Bay, about eight miles from Zamboanga, is destined to be one of the most important points in the southern archipelago and the centre of Mindanao's cocoanut oil industry. The Zamboanga Oil Company which was organized several months ago, hopes to have all the machinery installed and the mill producing oil before the end of January. In anticipation the Zamboanga Oil Company has been buying large quantities of copra during the past months and the result is that the company now has on hand and ready to put through the mill over P.400,000 worth of copra.

Caldera Bay is an ideal location for an oil mill. The largest ships afloat can tie up at the doors of the warehouses and discharge copra and the large tank steamers can be loaded with oil through pipe lines not fifty yards from the storage tanks. No expensive piers are necessary as there is over thirty feet of water within fifty feet of the beach.

The Tokyo Electric Light Company.—The Tokyo Electric Light Company netted a profit of Y.3,315,000 during the latter semi-annual term, showing an increase of Y.110,000 over the preceding six months.

A new canvas manufacturing company named the Yokohama Hampu Kaisha was organized in Yokohama on November 29 with a capital of Y.1,500,000.

FINANCIAL

National Budget for 1919-1920.—The Japanese national budget for the next fiscal year 1919-1920 was outlined by the Government to the public on December 3. The revenues are estimated at 1,037 million yen and the expenditures at 1,058 million yen ; the deficit amounting to 21 million yen. These figures show an increase of 214 million yen in revenues and of 235 million yen in expenditures as compared with the budget of the current year.

Cost of Civil War.—An estimate prepared by the Peking Military Council is to the effect that the military expenditure incurred in China to the end of November amounts to the enormous total of $125,000,000, sixty per cent. of which was spent by the North and forty per cent. by the South.

Customs Surplus to be Handed Over.—It appears that the Chinese Maritime Customs recently estimated that there would be a surplus of some Shanghai Tls. 2,600,000 at the end of the year. The estimate was based on returns for the first nine months and estimates for the remaining period. The Chinese Government applied for Tls. 2,500,000, and as the Government is hard pressed for funds, or will be very shortly, it is expected that this temporary accommodation will be afforded.

Sino-Japanese Telephone Loan.—The Telephone Loan concluded between the Chinese Government and the Sino-Japanese Enterprise Co., Tokyo, was signed on October 15th, and for some reason the details were not made public until recently. According to what has been announced, the loan was made on the following conditions :—

1. The amount of the loan is Tls. 10,000,000 including the loan made in 1916 amounting to Tls. 3,000,000.
2. The loan is to be used exclusively for the extension of the telephone service and for constructing new lines.
3. The term of the loan is three years.
4. The net amount to be received by the Chinese Government is Tls. 9,770,000.
5. The interest is 8 per cent. per annum.

The interest of the original Tls. 3,000,000 loan was 7 per cent., and the nett price 95, which terms were altered to the above. It is further agreed that the loan shall not be used for any political purpose, and the amount of the loan shall be held by the Japanese firm to be paid only when the use of funds has been ascertained.—"Manchuria Daily News."

MISCELLANEOUS

Improvement at Canton.—The ancient city wall of Canton some seven miles in circumference, averaging 30 ft. in height and 20 ft. in thickness, is being torn down, and avenues will be constructed in its place. Another avenue, running from the Bund southward to the heart of the city, is being worked out.

A corporation with a capital of $3,000,000 is being organized to procure the city tramway concession, some foreigners having already approached Chan Lim-pak, a well-known Cantonese merchant who leads the project, for shares in the proposed corporation. To look after the breaking down of the wall and other city improvements, a Directorate of Municipal Affairs has been created by the Provincial Government with Yang Wing-tai and Ngai Bong-ping, Commissioners of Finance and Police respectively, as directors. It is expected that there will some day be a Municipal Council composed of leading residents of the city.

To finance the improvements, the public lands formerly belonging to the Eighth Bannermen, a class of Manchus with special privileges under the old Ta Ching Dynasty, will be sold. Mr. H. L. Wu, C.E., a graduate of the University of Illinois, for a time in the service of the Provincial Government as acting chief engineer to the then Bureau of Public Works, is now supervising the construction work for the Directorate of Municipal Affairs. Of course, the Cantonese are mostly interested in the present improvements ; but the non-Cantonese militarists controlling the provincial affairs, nevertheless, are also supporting the enterprise.

Another public improvement to be taken up soon will be the betterment of the approaches to the Canton Harbor. Foreigners having business with Canton, such as the merchants of Hongkong, are also deeply interested in the project. According to the Kuangtung Board of Conservancy Works, it will take less than $3,000,000 to effect the improvement.

PORTS OF THE ORIENT NUMBER
BINDING COPY.
FAR EAST

FEBRUARY, 1919

VOLUME XV. No. 2

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

CHINA,
Japan,
Korea, Formosa,
Hongkong,
Philippines,
Indo-China, Siam,
Straits Settlements,
Dutch East-Indies,
Borneo, Celebes.

PRICE
$3

Railways Serving the Ports of China

No less than eighteen deep-water ports of China are connected with the interior by means of railways. Two additional ports may fairly be claimed by China in this connection. At the far north, Vladivostok serves as the terminus of the Chinese Eastern, which for one thousand miles traverses the Manchurian provinces. At the south, Haiphong, in French Indo-China, is important as a railway terminal and as a port largely because the railway from it reaches into the interior of one of China's finest provinces —Yunnan. Between these extremities, there are Antung, Dairen (Dalny) and Newchwang, Chingwantao, Tientsin and Tsingtau, Shanghai, Chinkiang, Nanking, Pukow, Kiukiang, Hankow, Hangchow, Ningpo, Amoy, Swatow, Kowloon and Canton. The first three named are served by the South Manchuria Railway, which is the name given to the portion of the Chinese Eastern serving the Liaotung peninsula when the Japanese succeeded to the Russian interest. At Changchun the South Manchuria is met by the southerly branch of the Chinese Eastern which joins the main line of the latter at Harbin. While north of Changchun the Russian gauge of 5 feet obtains, in contrast to the standard gauge of 4-ft. 8½-in. on other portions of the line, the entire length of 500 miles is operated much as one line. Some 250 miles of branch lines serve to connect the three ports with each other and with the famous Fusan Collieries. A branch line of 79 miles also connects the main line at Changchun with Kirin, the capital of the province of that name. The latter line, though financially a portion of the Chinese Government railways, is operated as a branch of the South Manchuria. Tsingtau is connected with the interior by means of the Shantung railway, built by German capital but during the course of the war operated by the Japanese following their capture of the port. This line joins the Chinese Government railways at Tsinan—256 miles west of Tsingtau, and has 24 miles of branch lines. With the exception of Kiukiang and Swatow, which are served by private or provincial lines, the other ports are for the most part, termini of lines known as the Chinese Government Railways.

The extent and location of the lines composing the Government railways is best shown by the map on another page. It will be noted that the major portion of the mileage is north of the Yangtze river. Out of 6,294 kilometres of mains and branch line in operation, at the end of 1917, only 1,301 were south of the river. Of the 4,987 kilometres in North China, all but 280 is line contiguous with other parts of the Government system; the exceptions, the Kirin-Changchun and Shihpingkai-Chengchiatun lines, are separated from their fellows only by the intervention of Japanese management, rather than in physical fact. In fact, north of the Yangtze river, railway trackage belongs to the continental system. By means of yard connections at junction points, Hankow and Pukow on the Yangtze river are connected by rail with not only such extreme Chinese points as Peking, Tsingtau, Moukden, Dairen and Antung, but also with Vladivostok, Irkutsk, Moscow, Petrograd and the other cities of Europe.

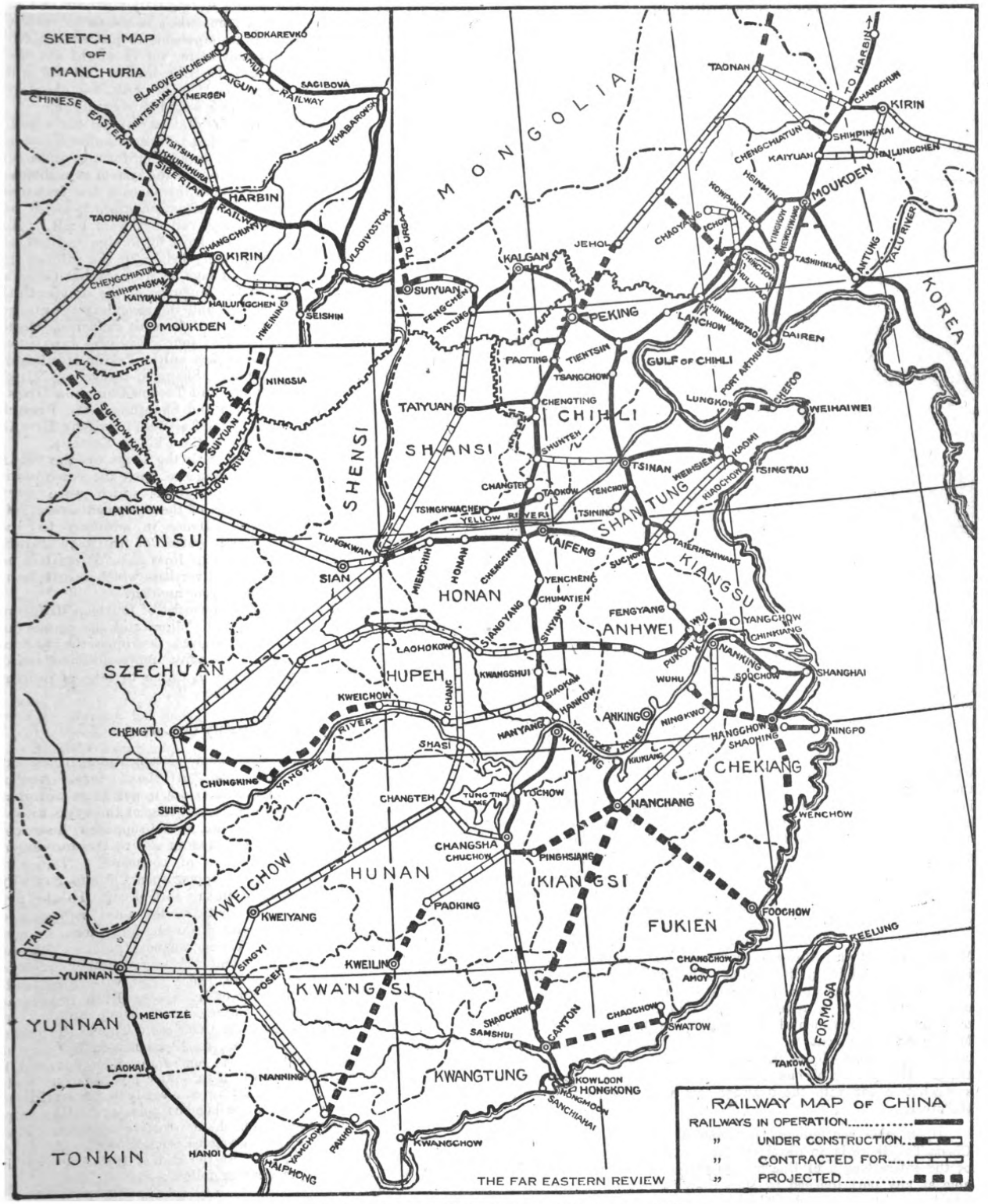
The kilometrage south of the river, in contrast, is broken into at least seven sections. From Shanghai one may run his car north over the 327 kilometres of the Shanghai-Nanking or south over about 210 kilometres of line to Zahkow, on contiguous line; but at the latter point occurs a break in what some day will be a continuous line to Ningpo. At Canton three lines radiate; the Canton-Samshui, the Kwangtung provincial line to Shiuchow, and the Canton-Kowloon line to the British territory opposite Hongkong; but none of these sections are as yet united. The first named and the last are separated by the city, while the Canton-Samshui is on the opposite side of the river from the other two lines. The Changchow-Amoy line extends back only 28 kilometres. But the Hupeh-Hunan section of the Canton-Hankow line joins up with the Chuchow-Pinghsiang road at Chuchow, and makes a contiguous line of about 470 kilometres. In fact, except for this section, and that about Shanghai, these southern lines merely serve as pegs between which it is hoped to string a railway system like that in the North.

The following table and the map together will give an idea of the length of line accessible from any port:—

Kilometres of Railway Operated, Classified by Use and Distributed by Lines

NAME OF ROAD	Main Line	Branch Lines	Industrial Track, Yard Track and Sidings	Total Track	REMARKS
Operated lines	Kilometres	Kilometres	Kilometres	Kilometres	
Peking-Hankow	1,214.493	(a) 98.420	(b) 336.633	(ab) 1,649.546	(a) Includes 7.242 Kms. leased from Peking-Moukden line.
Peking-Moukden	846.736	118.371	291.447	1,256.554	(b) Includes 4.037 Kms. leased from Peking-Moukden line.
Tientsin-Pukow	(c) 1,008.959	97.880	213.124	(e) 1,319.963	(c) Excludes 4.361 Kms. Running Powers on Peking-Moukden line.
Shanghai-Nanking	311.005	16.093	70.280	397.378	(d) Includes 4.043 Kms. leased from Peking-Moukden line.
Shanghai-Hangchow-Ningpo	280.717	5.665	57.421	343.803	(e) Excludes 528 Kms. Running Powers from Peking-Moukden line, but excludes 2.319 running Powers.
Peking-Suiyuan	(d) 428.752	(e) 38.098	137.806	(de) 604.656	(f) Includes 2.237 Kms. leased from South Manchuria Railway.
Chengting-Taiyuan	242.950	...	81.791	324.741	
Taokow-Chinghua	150.007	2.446	31.704	184.157	
Kaifeng-Honan	185.000	...	18.890	203.890	
Kirin-Changchun	(f) 129.890	...	24.961	(f) 154.851	
Chuchow-Pinghsiang	96.561	...	9.952	106.513	
Canton-Kowloon	143.296	...	20.326	163.622	
Canton-Samshui	48.924	...	22.370	71.294	
Changchow-Amoy	28.000	...	3.535	31.535	
Total Operated lines	5,115.290	376.973	1,320.240	6,812.503	
OPERATED BY CONSTRUCTION FORCES:—					
Kaifeng-Hsuchow	276.300	...	...	276.300	
Hupeh-Hunan	370.000	...	...	370.000	
Shihpingkai-Chengchiatun	150.000	...	...	150.000	
CHINESE GOVERNMENT RAILWAYS	5,917.590	...	...	7,608.803	

RAILWAYS IN OPERATION IN CHINA, FEBRUARY, 1919.

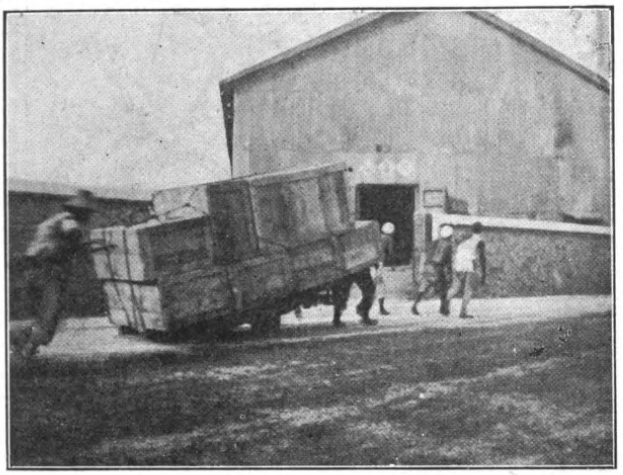


PROJECTED EXTENSIONS OF CHINA'S RAILWAYS.

This is the most up-to-date and accurate map yet issued showing the lines of railway so far contracted for by China. A few of the projected lines which are, or have been, under serious discussion are also given.

Need of Standardization

The Yangtze river most effectively separates the lines in the South from those of the North. No bridge or car ferry so far makes it possible for equipment on one side to pass over to the other. Besides it is scarcely correct to assume that the lines North are as much of a system as the paragraph above might lead one to infer. Attention has already been called to the fact that at Changchun, there is a change from the standard gauge on the



"TEAMING" FREIGHT TO THE YARDS OF THE PEKING-MOUKDEN RAILWAY AT TIENTSIN

South Manchuria railway to the 5-foot gauge on the Chinese Eastern Railway. While the standard gauge prevails in the remaining lines, the Cheng-Tai has a gauge of one metre, which is also the gauge of another French line, the Yunnan railway. On the Cheng-Tai (Chengting-Taiyuan) line an experiment has been tried by way of an extensible bogie, by which a car can be made to run on tracks of either gauge. By release of a cotter on a broad bearing axle box, the wheels can be forced inward or outward at will. When it is wished to make the change the cars are hauled in the appropriate direction over a tapering section of track re-inforced by guard rails. When the wider gauge is wanted the guard rail forces the wheels outward: when the narrow gauge is wanted the track rail forces the wheels inward as the car is hauled along the track. But one accident occurred early in the history of this experiment, and it was given up. Whether the activity of the military in appropriating cars influenced the officials of this line toward avoiding the use of a device which might lead to the loss of their cars, only the officials themselves can state. Hence the break in gauge between the Cheng-Tai and the Peking-Hankow is absolute.

Between the Chinese Government lines and the South Manchuria Railway through movement of equipment is also impossible except in special trains. The reason for this is found in the height of the draw bar. The diameter of the wheel used under Government equipment is like that used in England and some lines of continental Europe, while that on the South Manchuria equipment is like that in Japan and America—considerably less. Hence the wagons cannot move in the same train. For yard movements an adjusting car has been used somewhat—a car with the drawbar low at one end and high at the other.

Upon the contiguous Government lines, except for the Cheng-Tai, there is no physical obstacle to a complete utilization of the entire length of line by equipment which might be available at any port touched by such lines. One qualification, however, must be mentioned. The grades over the Nankou pass are in excess of three per cent., and safe operation requires the use of the automatic train brake. Wagons of the Peking-Suiyuan line are so fitted, but on the lines with which it connects the wagons are not so fitted. Of course Peking-Suiyuan cars can be hauled over such connecting lines, but when it comes to reverse the process, it is not so easy. It is impossible to put such a car in the middle of a Peking-Suiyuan train, for it would cut the connection between the engine and the train brakes. At the end of the train a single car, might be hauled with comparative safety, but in larger numbers, the risk would be considerable.

Beyond the gauge of the track, the diameter of the car wheel, and the height of the drawbar, there has been no standardization upon the Government railways. This lack of uniformity puts no fatal handicap to the use of any portion of the system as a means of communication to any port, but does introduce a few features which are worthy of attention. The situation arose because of the manner in which the Government railways were built. As everyone knows most of the lines were built by foreign capital of various nationalities. This immediately brings in the subject of language. While Chinese is the language of ordinary business, a foreign language becomes the official language of the contractual relations with the building company and the secondary language of business. With the elimination of German influence, these foreign languages are now reduced to four: English, Japanese, French, and Russian. English is spoken on the Peking-Moukden, Tientsin-Pukow, Shanghai-Nanking, Shanghai-Hangchow-Ningpo, Canton-Kowloon, Hupeh-Hunan and Taokow-Chinghua lines; Japanese upon the South Manchuria and Shantung lines, French upon the Peking-Hankow, Chengting-Taiyuan, Kaifeng-Honan and Yunnan lines, and Russian upon the Chinese Eastern.

This foreign character, coupled with the terms of the loan contracts, has had a nationalistic influence upon the equipment of the various lines. Subject to limitations which were very broad the standards and specifications of the equipment were left to the discretion of the contractor. Hence in addition to the varieties of design which any single system of railways might naturally show, the Chinese Government lines have diversities as to national type, and the individual diversities which result from the independence of one contractor from another.

The Chinese Government railways consist of fourteen different lines. Add to this four "concessioned" lines and the numerous private lines, and one at once perceives the opportunity for diversity. As an Equipment Company representative said, recently, "There aren't films enough in China to take a picture of each type of railway equipment there."

Type and Capacity of Cars

Chinese railways observe the usual classification of goods wagons as between open and closed, or "box" cars. Among the open wagons, the flat car without sides is not as common as in some countries, most of the open cars being of the type known abroad as gondola or coal cars. It must not be supposed, however, that this type of equipment is confined in use to the movement of coal and similar coarse articles of commerce. There is practically nothing of importance shipped upon Chinese railways that at some season does not move in this sort of car. In the first place they constitute eighty per cent. of the total number of wagons. In the second place, soldiers do not find them as comfortable living quarters as the closed wagons, and so do not commandeer them to the same extent. A large number of these open wagons are fitted with doors, hence those with high sides are readily used for the shipment of live stock. Even horses are generally hauled thus, for the Chinese horse, being small, can barely get his head above the high sided car. The high headed mules are tethered. Forms of goods readily damaged by weather are first loaded with a ridge in the centre and then covered by matting made of split bamboo which in double layers turns water quite effectively. This same matting can easily be transformed into an awning by means of a few bamboo poles and some rope, if the sun rather than the rain is the destructive element. There are a few special classes of goods wagons, such as stock cars, tank cars, a single poultry car, etc. At the end of 1916 the relative numbers of the main types were as follow:—

Covered wagons...	2,480
Open wagons	8,004
Special wagons	110
Total ...	10,594

The average capacity of goods wagons is slightly under 25 "long" tons. Closed wagons average a little higher than open wagons. Notwithstanding this some of the largest cars are of the open type and have a capacity of 40 metric tons, about 100,000 pounds. But among the open wagons is a large number with a capacity of only 10 tons, others of 12 tons, and still others of 15 tons. This brings down the average. The typical closed car is of thirty tons capacity, with a considerable number, twenty tons.

Great Shortage of Equipment

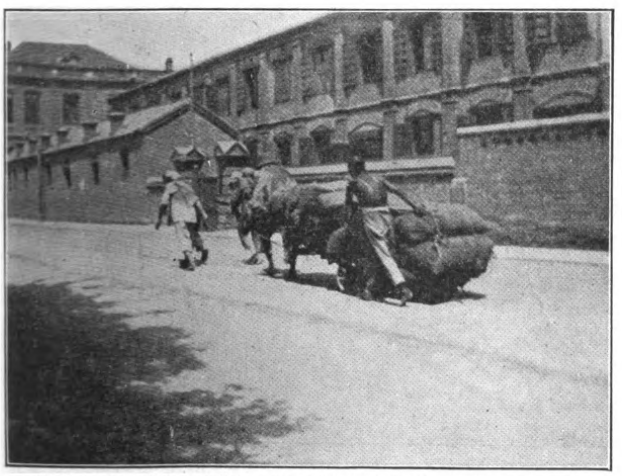
There is a shortage of all sorts of equipment in China. The lines were developed almost to their full capacity before the outbreak of the great war. Since that time prices have been so high, deliveries so uncertain, and financial conditions generally so difficult that very few purchases have been made. Added to the difficulties resulting as a matter of course, has been the increase of traffic due to the decrease of shipping along the coast and the appropriation of cars and the use of locomotives by the military in China. Several of the lines are limited by their locomotives more than by their wagon supply. These lines will be indicated by the following table which shows the average number of kilometers run by each locomotive during the year 1916:—

TABLE II.

Kilometres Run per Road Locomotive.

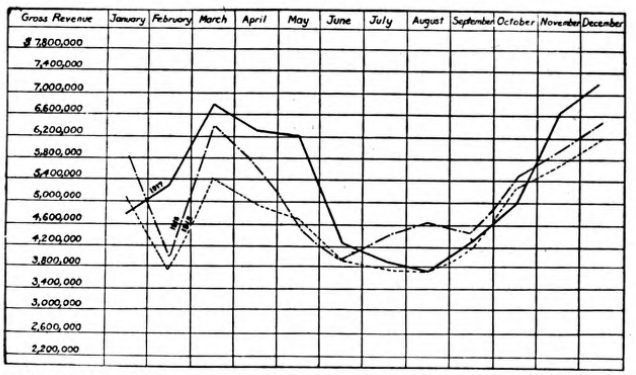
Name of Line.	No. of Passenger and Goods Locomotives.	Locomotive Kilometres Total Road.	Per Locomotive.
1. Peking-Hankow	104	6,740,861	64,816
2. Shanghai-Nanking	33	2,058,550	62,380
3. Taokow-Chinghua	7	374,913	53,559
4. Tientsin-Pukow	76	3,900,897	51,327
5. Kaifeng-Honan	10	490,769	49,077
6. Kirin-Changchun	10	463,153	46,315
7. Peking-Moukden	126	5,265,134	41,178
8. Canton-Kowloon	12	494,140	41,178
9. Chuchow-Pinghsiang ...	10	394,773	39,477
10. Shanghai-Hangchow-Ningpo	24	824,784	34,366
11. Canton-Samshui	6	189,342	31,557
12. Peking-Suiyuan	44	1,122,620	25,514
13. Changchow-Amoy	2	43,457	21,728
14. Chengting-Taiyuan	44	861,033	19,569
Chinese Government Railways ...	508	23,224,426	45,717

The average for the United States in 1914 was 43,637. Not only is the Chinese record higher, but the method of computing the statistics is such as to make the comparison still more startling. The Chinese figures, exclude all the switching done by road locomotives. In the United States the policy is to use up a locomotive quickly rather than to repair unduly. In China the market is so far away, that the announced policy is to make extensive repairs. But on such lines as those at the head of this list such a policy is impossible to execute.



SO FAR, THE "COOLIE" IS THE CHEAPEST DRAUGHT ANIMAL IN CHINA

The condition of the wagon supply is best attested by a comparison with America under peace conditions. In America each ton of car capacity transports a ton of freight an average distance of 145 miles twice a month. In China the same ton of car capacity transports a ton of freight 89 miles nearly six times a month. When a car is loaded only a few hours are required to run an additional 56 miles. The delays have always been in the loading and the unloading. But the Chinese car gets loaded and unloaded three times to the American car's once. The demand for wagons is much greater during the fall and winter months than during the spring and summer months for the big grain movement then is added to a large coal movement. The following diagram will make this clear. Some irregularity is shown in January and February. When one remembers that February is ten per cent. short in days, and that the Chinese New Year, which means that a large proportion of the mercantile community is taking holiday, occurs sometimes in late January and at other times in February, this irregularity is explained.



OPERATING REVENUE BY MONTHS, FOR THE YEARS 1915, 1916 AND 1917
REVENUE EXPRESSED IN STANDARD CHINESE DOLLARS

The scarcity of wagons is generally reflected by the work which is obtained from the supply at hand. The relative shortage upon the several Government lines is indicated by the following table. In this table performance results are obtained by computing first the number of full loads carried per car during the year. This number is multiplied by two in order to get the number of days required for loading and unloading cargo. The remainder when the resulting product is subtracted from 365 yields the number of days left in the year for actually running with or for cargo. Such a figure divided into the number of ton kilometers carried by each ton of carrying capacity during the year, gives a figure which as a basis of comparison eliminates the inequalities in length of haul upon the various lines. The larger the quotient, the less idle time per car, or the more effective the running schedules. In some of these cases only one day has been allowed for both loading and unloading because of circumstances connected with the line. It will be observed from this comparison that all the longer lines are very busy.

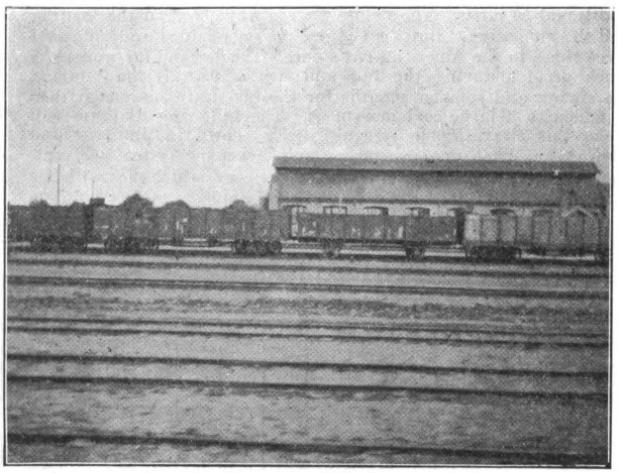
TABLE III.

Ton Kilometers per Running Day, 1916, per Ton of Carrying Capacity.

Name of Line.	No. of Loads (1)	Number of Days For Loading and Unloading.	For Running	Ton Kilometers per Ton of carry Capacity Per Total.	Per Running Day	Ave. Haul per Ton (kms.)
Peking-Hankow	66	132	233	15,722	67.4	238
Peking-Moukden	73	146	219	9,544	43.5	131
Tientsin-Pukow	55	110	255	13,777	54.0	252
Shanghai-Nanking ...	82	164	201	18,896	94.0	218
Shanghai-Hangchow-Ningpo	25	50	315	2,341	7.4	94
Peking-Suiyuan	70	140	225	4,436	19.7	64
Chengting-Taiyuan ...	62	124	241	6,002	24.9	79
Taokow-Chinghua ...	164 (2)	164	201	12,299	61.1	75
Kaifeng-Honan	89	178	187	6,362	34.0	72
Kirin-Changchun	80	160	205	4,809	23.4	60
Chuchow-Pinghsiang ...	181 (2)	181	184	16,952	92.1	93
Canton-Kowloon	52	104	261	2,953	11.3	57
Canton-Samshui	39	78	287	356	1.2	9
Changchow-Amoy ...	10	20	345	1,828	5.3	19
Hupeh-Hunan	39	78	287	1,766	6.2	45

(1) i.e., number of tons carried per ton of carrying capacity available.
(2) One day only for loading and unloading.

This chronic shortage of wagons means that during the busy season a very considerable quantity of goods cannot be hauled as offered, but must await its opportunity. The railways as a rule have but a limited amount of godown space, hence the shipper must arrange his own storage facilities. Although harvest time



TYPES OF COAL WAGONS ON THE PEKING-HANKOW LINE. A 12-TON WAGON WITH 40 TONS WAGONS AT EITHER SIDE

is subject to frequent rains, a large proportion of grain shipments wait for cars protected only by coverings of matting or perhaps tarpaulins. The assignment of cars to applicants is in the hands of station masters, who in consequence have a power not to be ignored. Perhaps no country has failed of such an experience at some period or other, and has witnessed the advantages to shippers which is derived from the friendship of the car distributing authority. Invariably in such cases the means taken to acquire and maintain such a valuable friendship become more and more subject to criticism. Of course powerful firms are in a position sometimes to resist this tendency without paying tribute to it. But the attitude is dangerous, for it is so easy for cars to develop "hot boxes" or other defects, and thus be set out on sidings where they may be "forgotten." A former Minister of Communications, Hsu Shih-ying, in an official proclamation publicly charged that practices of this nature on the government lines were driving business away to competitors. There are those who assert that this Minister was in a position to speak with authority upon the subject.

The Question of Tariffs

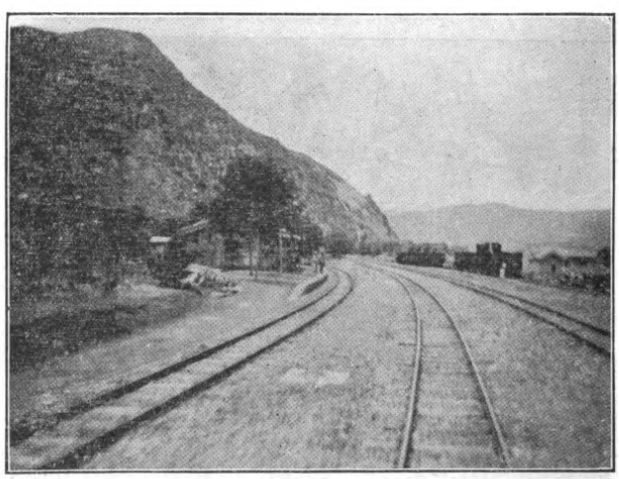
Compared with many foreign countries, Chinese railway tariffs are simple affairs. However, looking at the entire length of line. and the large number of commodities hauled between various pairs of stations, one is impressed with the complexity of this comparatively simple matter. Probably not more than five hundred different commodities are recognized in the Chinese tariffs, compared with thirty thousand in America. The greater portion of the traffic moves upon regular class rates instead of special rates—if exception be made of coal. Of the latter the points of origin and destination are few, so that the special rate has every appearance of regularity. Yet these tariffs partake of all the differences shared by the physical properties of the lines. There are fourteen separate lines in the Government system, hence there are fourteen different tariffs on the Government lines. There is no uniform classification of commodities or of rates, although there has been some effort toward a uniform classification of commodities and in the form of tariff. Yet there are many resemblances. For example, all the lines place the risk of the shipment upon the shipper. The Shanghai-Nanking and the Shanghai-Hangchow-Ningpo Railways offer an insured rate, i.e. "railway risk," but upon the former line at least the shipper apparently prefers to follow his own means for averting loss and avail himself of the lower rate, for practically all the shipments are at owner's risk.

The presence of a large number of closed cars upon these lines has some bearing upon this choice. The proportion of the total business handled by "transportation" companies has still another influence, as will appear later. Upon the Shanghai-Hangchow-Ningpo insurance costs the shipper 25 cents per ton on a haul of 100 miles. On the Shanghai-Nanking a charge of $2.00 per car is added to the owner's risk rate in order to arrive at the charge for Railway risk. The length of the haul has nothing to do with the cost of the insurance, in contrast to the Shanghai-Hangchow-Ningpo line, it being the theory that losses occur in terminals rather than in transit. Other lines refuse to offer any "railway risk" rates, on the ground that the shipper has means of protecting himself which are more economical than the railway could supply. The risk from pilferage is high. It must be remembered that in China the margin above bare subsistence is very narrow in the case of an overwhelming proportion of the population. As a result there is no little trouble with the stealing of spikes from the track, of nuts and loose parts from cars and other equipment, and naturally cars standing in a yard at night offer a great opportunity to the clever, hungry thief. Until steel floors became common, it was no uncommon thing for the bottoms of closed wagons to be ruined by augur holes bored through in order to tap kerosene cans or dry grains. Rice hauled in open cars or slatted cattle trucks, suffers considerable loss from petty thievery accomplished by means of a hollow bamboo with a sharpened end. This sharp end is thrust into the sack and the tube makes an excellent conveyor. It would not be quite right to say that the railway never pays a claim. For palpable negligence under certain conditions, railways have admitted responsibility, but China is certainly no happy hunting ground for the "Claim shark."

It is the universal rule that a charge additional to that in the tariff is assessed for the loading and unloading of cars at stations. The railway furnishes the forces, and assesses the charge against the merchant. In those few cases where the merchant has a private siding he may by special arrangement, and perhaps payment of a licence fee, attend to this feature with his own forces. Under such circumstances he has a switching charge to pay. The rates are not uniform by any means, varying from 5 cents per ton to 15 cents per ton, with variations to be added for variations in the nature of the transfer, that is, be it from car to platform, car to boat, car to wagon, etc. It will be necessary to look up the tariff for each line individually.

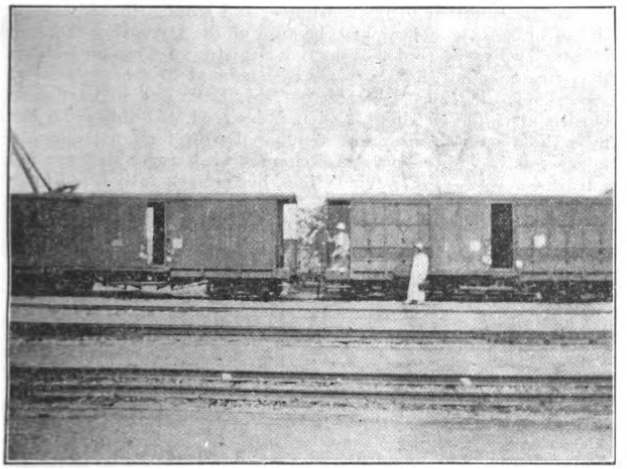
A Variety of Classifications

The Shanghai-Nanking is the only line which carries the major portion of its goods traffic on special rates—some two hundred of such rates being in effect. The Kaifeng-Honan, however, has nearly 100 such special rates, but they apply almost entirely to coal and oil, while those on the Shanghai-Nanking apply to foodstuffs, manufactures, and almost all the principal articles of commerce



ON THE CHENGTING-TAIYUANFU LINES. A STATION YARD CUT OUT OF ANTHRACITE. NOTE THE BLACK SEAMS AT THE LEFT

in the territory which it serves. The numbers of classes recognized vary considerably also. On three lines three separate classes are provided. On two lines there are six classes. Another line has five classes. And the remaining lines which use the classification system have four classes with one or more special classes like explosives, inflammables, highly valuable goods, etc. On the Chengting-Taiyuan this system is not followed at all, commodities being listed according to value in twenty-seven different grounds. The Kaifeng-Honan follows a similar system.



TWO TYPES WITH EXTENSIBLE BOGIES, AIMED TO TRANSFER FROM NARROW TO BROAD GAUGE, NOTE PLATFORMS AT EACH END OF CAR TO SERVE AS SHELTER FOR BRAKEMEN. THE STOCK CAR, ON THE RIGHT, IS FITTED WITH TROUGHS FOR FEEDING AND WATERING HOGS AND OTHER LIVE STOCK EN ROUTE

After the class has been decided upon there is still a considerable difference of method in applying the rate. In general it may be said that the most important terminal cost is covered by the charge for handling, while the line costs are assessed with a rather close adherence to the distance basis. However, several of the lines admit the " fade-away " principle, that is a slightly reduced rate per mile for longer distances than for shorter hauls. The Peking-Hankow is such a line. The rapidity of the " fade " is not at all regular between the various commodities. For example, for tea the rate varies according to five groups of distances, while for anthracite coal there are seven groups. There are also a few rates on coal as between certain specified points. The unit of distance on the Peking-Hankow, as on the other French and Belgian lines, is the kilometre. A simple example of the application of a Peking-Hankow rate may be taken from Tariff No. 35, Wheat. Movement, Yencheng to Peking. An intermediate point of importance, Sin-Siang-Hsien is made a basing point from which to Peking the rate per ton is $9.60.

From Yencheng, first 25 kilometres 25 by $0.409 equals	$1.00
Remainder to Siang-Hsien 195 by $0.284 equal... ...	5.54
	6.54
	$16.14
To upper cipher, total rate per ton...	$16.20

On the Shanghai-Hangchow-Ningpo, this principle takes uniform application upon all class commodities, special rates applying between specific points. On the latter line there are ten distance groups recognized. On the pioneer line, the Peking-Moukden the straight mileage basis is followed, no concessions of any sort being allowed, except a minimum of 30 miles is assessed within certain districts instead of 35 miles which is the general rule. On the Tientsin-Pukow the freight charges are all worked out in advance. The entire length of line is provided for in two mile groups of distances. In the table of charges, opposite each distance under each class is entered the freight charge per ton or per picul as the case may be. A minimum of fifteen miles is assumed. At 100 miles the third class car load rate works out to 1.7415 cents per ton mile. At 200 miles it works out to 1.6575: at 400 miles, it is 1.3721: 600 miles, 1.13 cents. Hence the "fade-away " principle or " tapering " rate is to be found on that line also.

The above paragraph gives some idea of the principles underlying Chinese rates. The application can be illustrated better, perhaps, by taking an actual instance, although in the selection of instances great injustice may result. Out of five hundred rates it would be remarkable if one could not pick out some example to prove any point one wished to make which at the same time would be entirely untrue of the system as a whole. But there are two objects which are above all fundamental to China. These are rice and coal. The actual rates upon these commodities on the principal lines are as follow:—

RICE.	CAR LOADS.
Peking-Moukden—3rd class ...	... 3 cents per ton mile.
Peking-Hankow—Special ...	... 4 cents per ton kilometre tapering to 2.13 cents.
Tientsin-Pukow—3rd class ...	... 2.7 cents per ton mile tapering to 1.13 cents.
Shanghai-Nanking—3rd class	... Principally special rates $15 to $35 per wagon of 35 tons or at the rate of about half a cent per ton mile.
Shanghai-Hangchow-Ningpo ...	... Special rates Shanghai-Hangchow $38 per wagon—about one cent per ton mile.
Peking-Kalgan—2nd class ...	1.6 cents per *li*—about 4.5 cents per ton mile.
Chengting-Taiyuan	... 4.05 cents per ton kilometre.
Kaifeng-Honan—4th class ...	... 3.5 cents per ton kilometre.

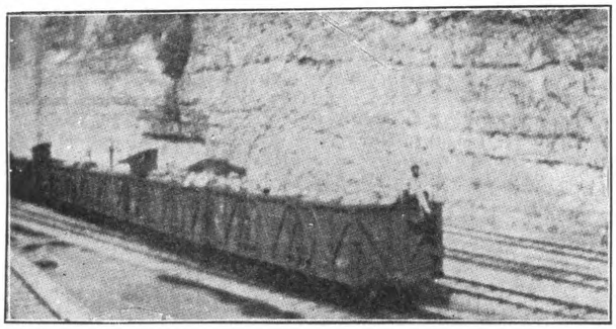
The above rates almost invariably apply only to open cars, for closed cars an additional charge varying from one cent to a cent and a half per car mile is made. The result is that closed cars get the bulk of carriage.

COAL.	
Peking-Moukden—3rd class ...	... 1¾ cents per ton mile.
Peking-Hankow—Special ...	... Tapering, 2 cents to 0.55 cents per ton kilometre.
Tientsin-Pukow—3rd class ...	... Tapering, 2.7 to 1.13 cents per ton mile.
Shanghai-Nanking—Special ...	... 35 ton wagons $13 to $28 depending upon station to and direction of haul. Resulting rate about 15 per cent. lower than rice rate.
Shanghai - Hangchow - Ningpo — 5th class	Special rates by zones ranging from 40 cents per ton minimum to $1.00 for 150 miles.
Peking-Suiyuan—Special ...	... Averages about 1 cent per ton per *li*, or 3 cents per ton mile.
Peking-Suiyuan—Special ...	... $.009 per ton per *li* in Peking region $.011 per ton per *li* in north of Nankou, or an average of about 3 cents per ton mile.
Chengting-Taiyuan—Special ...	... 3.2 cents per ton per kilometre for anthracite and 3 cents per ton kilometre for soft coal.
Kaifeng-Honan—Special ...	... 1.3 cents per ton per kilometre for first 65 kilometres, and .6 cent per ton kilometres for remainder of haul.

Naturally imported goods take a higher classification and rate than do native products. They are in the nature of luxuries. To illustrate the rates upon machinery may be compared, using the car load basis.

Peking-Moukden—1st class ...	... 5 cents per ton per mile.
Peking-Hankow—Special ...	... Tapering rate, First 25 kilometres 4.34 cents per ton kilometre. Next 275 kilometres 3.17 cents per ton kilometre. Remaining distance 3.105 cents per ton kilometre.
Tientsin-Pukow—2nd class if not otherwise specified.	Minimum of fifteen miles, then tapering rate of 2.75 per ton mile down to 1.582 at 600 miles or thereabouts.
Shanghai-Nanking—3rd class if in small lots.	In carloads 5 cents per car mile, capacity up to 35 tons.
Shanghai - Hangchow - Ningpo—2nd class in small lots.	In carloads 50 cents per car mile, 30 tons capacity.
Peking-Suiyuan—1st class ...	... 2 cents per ton per *li*, or about 6 cents per ton per mile.
Chengting-Taiyuan—5th class (23 classes on this line)	... 1.25 cents per ton kilometre.
Kaifeng-Honan—4th class ...	... 3.5 cents per ton per kilometre.

These rates also are for open wagons. On the Peking-Moukden no mention is made as to open or closed wagons, but the officers in exercising their discretion in allotments of wagons secure the same result.



COAL TRAIN ON THE CHENGTING-TAIYUANFU LINE. NOTE THE LITTLE CABINS AT ONE END OF EACH WAGON. CHENGTING-TAIYUAN TRAINS HAVE NO "CABOOSES" OR "BRAKE VANS" ATTACHED

In order to give a more general idea of the rate level in China the following table of averages relating to the year 1916 is offered:

AVERAGE REVENUE PER TON. KILOMETRE.

Name of Road	AVERAGE REVENUE PER TON KILOMETRE							
	Agriculture Products	Animal Products	Mineral Products	Forest Products	Manufactures	Material for other Railways	Service Stores	Total
	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
Peking-Hankow ...	2.48	3.14	.95	2.71	3.19	1.01	.47	1.68
Peking-Moukden ...	1.99	2.40	.86	1.34	2.03	.99	.68	1.19
Tientsin-Pukow ...	.90	1.30	.77	1.12	1.38	.83	.42	.92
Shanghai-Nanking ...	.45	1.30	.29	.48	.72	.25	.24	.49
Shanghai-Hangchow-Ningpo ...	1.80	3.82	.67	.60	1.46	.44	.27	1.29
Peking-Suiyuan ...	2.80	2.43	1.71	2.58	3.23	—	.73	2.26
Chengting-Taiyuan	4.04	5.18	1.92	2.92	4.24	1.84	1.17	2.35
Taokow-Chinghua ...	2.40	4.13	1.01	2.02	2.24	—	1.06	1.10
Kaifeng-Honan ...	—	—	—	—	—	—	—	2.12
Kirin-Changchun ...	2.29	3.55	2.35	2.65	1.94	—	1.34	2.20
Chuchow-Pinghsiang	2.01	5.65	.95	9.12	2.80	2.16	1.51	.99
Canton-Kowloon ...	2.81	3.52	2.28	1.52	2.43	—	1.15	2.44
Canton-Samshui ...	—	—	—	—	—	—	—	21.19
Changchow-Amoy ...	4.16	24.23	2.20	7.58	6.44	—	.90	3.40
Chinese Government Railways ...	1.51	2.28	.96	1.37	2.31	.97	.55	1.33

How Freight Charges are Determined

A freight charge is arrived at by the combination of many considerations. The simplest of these are distance, class, and quantity. The foregoing paragraphs have given some evidence as to the elusive nature of classification, and that distance has some uncertainties connected with it. The factor of quantity it would seem is something material enough to be definite. Yet such is hardly the case. Live stock, vehicles, and a few other commodities are assessed by the head or per unit instead of by weight. A few light commodities upon certain lines are measured by actual weight. The Tientsin-Pukow lists as such, Chinese lanterns, dried leaves, hay, poultry, strawbraid, basketware, and a few other commodities. But as a rule the cargo is assumed to weigh the carrying capacity of the car. This means, of course, that the shipper tries to get every pound into a car that he can. In the case of covered cars, he is limited by the roof. Hence he favors open cars. In order to make something short of the sky the limit for loads on open wagons, at the end of the lead to loading tracks is placed a loading gauge beneath which the load must pass before it will be accepted by the railroad. Yet this is not limit enough in the case of heavy commodities. Rule 15 of the Peking-Mouken line, followed up by occasional weighing of suspected cars, ought to be sufficient to accomplish its purpose in this direction. It reads:

> "If cars are overloaded the owner will be fined 30 times the ordinary freight on the excess weight."

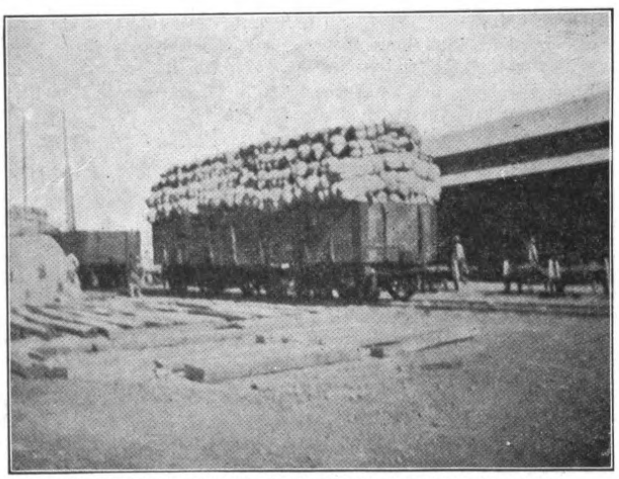
Fines are also imposed for false declaration of the class of the commodity, if the deception is discovered. The units of weight are the ton and the picul. The ton, is the English, or "long" ton, on all the lines except those using French as the secondary language. The latter use the metric ton, which is about three per cent. larger. Since the variations in scales are usually wider than this, and weights are so commonly estimated, the differences between these two units are ignored. The picul corresponds to the hundred-weight abroad, but consists of 100 catties, which, in turn, are one-third heavier than the ordinary pound.

Chinese demurrage rules are aimed to make cars live up to their classification as "rolling stock." Only twelve hours free time is allowed for loading or unloading upon any line. Upon the two lines out of Shanghai only six hours' time is allowed. Upon these lines, if unloading has not been commenced within four hours after placement, the railway reserves the right to switch the car to its godowns, unload same with its own forces, charge the handling to the consignor, and storage in addition if it sees fit. About a year ago, because of the increasing shortage of cars, orders proceeded from the Ministry of Communications that free time on all lines was to be reduced to six hours. But several of the lines objected that this limit put an impossible burden upon the merchant, and it is believed that this order has never been strictly enforced. Compared with foreign levels and labor costs in China, demurrage charges are heavy. They are not uniform as between the various lines, but are generally based upon the capacity of the wagon. The following table gives these rates for the more important lines:—

Line.	Kilometres operated	Free time allowed (hours)	Rate per car per day. Tons Capacity 10	20	30	40	Notes.
Peking-Moukden ...	955	12	$5	$10	$15	$20	
Peking-Hankow ...	1,316	do.	—	3	—	6	
Peking-Suiyuan ...	429	,,	3	6	—	—	Allowance made for storms.
Tientsin-Pukow ...	1,107	,,	3	6	9	12	
Shanghai-Nanking / Shanghai-Hangchow / Ningpo ...	597	6	—	—	—	—	Then unloaded by carrier at expense of consignee
Kaifeng-Honan ...	185	12	—	3	4.50	6	
Chengting-Taiyuan ...	243	,,	—	3	—	—	
Canton-Kowloon ...	143	24	—	—	5	—	Handles almost no goods.

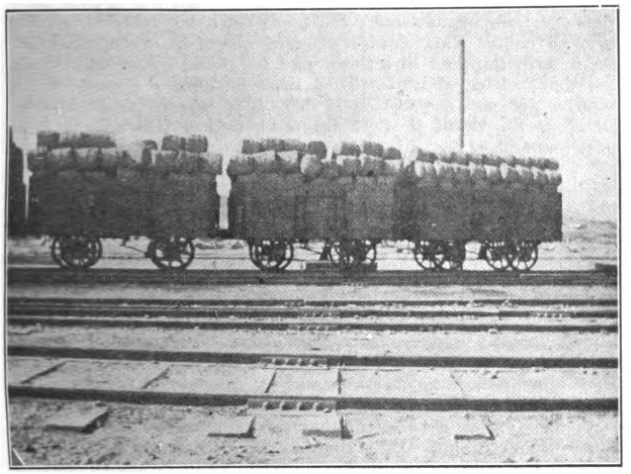
Chinese Railways not a "System"

All of the above discussion of rates and classes has dealt with traffic local to each line. But so far as any general view of Chinese railways is concerned, the picture is as complete as it would be if all other goods traffic were included. In the usual acceptance of the term there is no "through" traffic in China. Although these five thousand kilometres of line are sometimes referred to as the Chinese system, they do not compose a system at all. They consist of fourteen independent lines—independent particularly in goods traffic matters. There is no such thing as a set of through rates. To be sure certain of the lines have made arrangements with their immediate connections for billing from certain points on its line to certain points upon a connecting line, this to apply to certain commodities. But for the most part, a through shipment will be billed by the originating line to its last



A 30-TON PEKING-MOUKDEN WAGON LOADED WITH WOOL AT TIENTSIN. DURING THE RAINY SEASON SUCH CARGOES ARE COVERED WITH MATTING

station in direction of measurement; there it must be transferred to the connecting line and rebilled to its furthest station, and there the process will be repeated until the shipment reaches its final destination. The Tientsin-Pukow, however, publishes two



THERE ARE NO REFRIGERATOR CARS IN CHINA, BUT EVERY BIG CITY HAS PLENTY OF FRUIT IN SEASON. THE CARS ABOVE ARE LOADED WITH PEARS. THE PEKING-MOUKDEN LINE HAS A LARGE NUMBER OF THIS TYPE OF WAGON

rates from points on the Shanghai-Nanking to Tientsin. Both rates are on flour, and include lighterage over the Yangtze river and handling charges at Nanking Ferry and Pukow. Upon all other commodities moving between these two lines the shipper must make all his own arrangements for getting his goods across the river. The Peking-Hankow line publishes several rates with the Peking-Moukden, the Chengting-Taiyuan, and the Kaifeng-Honan, principally concerning coal, but also including merchandise and live stock to a limited extent. There is now considerable through shipment between points on the Shanghai-Nanking and the Shanghai-Hangchow-Ningpo. But the extent of such traffic in 1916 was only two per cent. of the total. In that year the Peking-Moukden and the Peking-Hankow were practically the only lines which did not rebill practically everything received from other lines. The commodities billed inter-line were classed principally as mineral products—that is, coal, and salt, and manufactured articles.

Why There are No Through Shipment Arrangements

The principal reason for lack of through billing arrangements is the reluctance of the several lines to interchange equipment. There is such a shortage of cars that no traffic manager will permit his cars to leave his line if he can help it. Hence the rule is to transfer loads at junction points. In case of the joint rates which were explained above, considerable portion of the business goes through to destination without transfer, but even in these cases there are numerous rules limiting the distance to some fifty kilometres from the junction point which cars may run on the foreign line. There is also very considerable distrust among the lines as to the ability or the willingness of using lines to keep in good repair the visiting car. This ranges all the way from criticism of the quality of axle grease used by the other line, through doubt as to the mechanical ability employed to actual reflections upon the intent of the foreign line management. This, of course, merely evidences, the independence of the lines from each other, with the inevitable provincial spirit as a result. Total payments for interchange of rolling stock in 1916 by the Government lines were in round numbers $163,000. The prevailing rate is about $1.50 per car per day—until penalty rates begin to run, as they did at times. This means that something under 13,000 car days were involved, or some 350 cars throughout the year. In other words only 3½ per cent. of the total car supply was permanently away from home as a result of interchange. In the United States and Canada, where single systems are twice as long as the entire Chinese Government lines, about 50 per cent. of the car supply is permanently upon foreign lines.

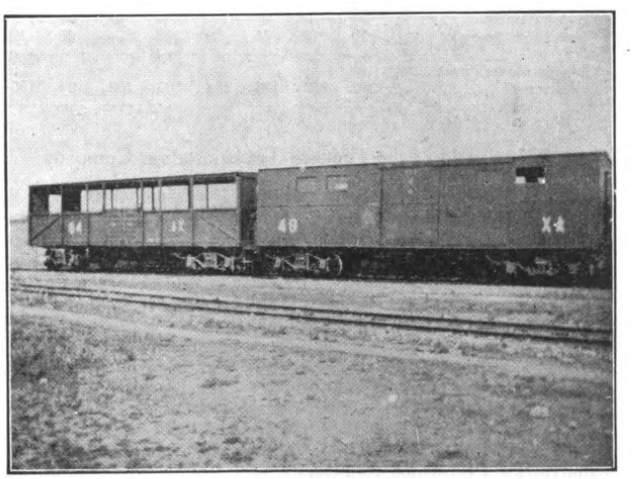
Another obstacle to through shipments and through rates is the presence in China of so many depreciated bank notes. Lines which are able to make collections in silver will not accept in the rate division notes of this character. If the other line accepts notes and must pay the foreign line proportion in silver, the result is that it receives next to nothing for its portion of the through haul.

The Curse of Likin

A third impediment is the internal tax known as *likin*. To a large extent the more important lines have removed this obstacle to the movement of goods locally by means of a yearly lump sum payment to the provincial authorities. But some lines have not been able to arrange this. It is impossible for the originating line to estimate what the likin official will tax the shipment, so he cannot allow for this in the freight charge. The result is that the owner must send some one along with the shipment in order to haggle with the likin authorities, and hence nothing would be gained if there were through billing arrangements. A likin station is a most effective barrier to rail traffic. There is nothing new in the comment that this service is thoroughly inefficient and thoroughly corrupt. It has no standards, and the tax collected is largely the personal arrangement between the merchant and the inspector. Inspectors' wages are notoriously low, and he is expected to make large presents to his superiors in order to keep them assured of his loyalty. Naturally the inspector somehow, from somewhere, must get "his." Concealment of weights, of values and even of the entire cargo is, therefore, one of the necessary elements of a successful trader's make up, and above all he must protect an indulgent inspector from his supervising officers. Railed goods with the weights stencilled on the side of the car, the character and sometimes the value of the goods declared in the invoice, do not lend themselves to prevarication, and there certainly is no way for the car to go by an unfrequented path.

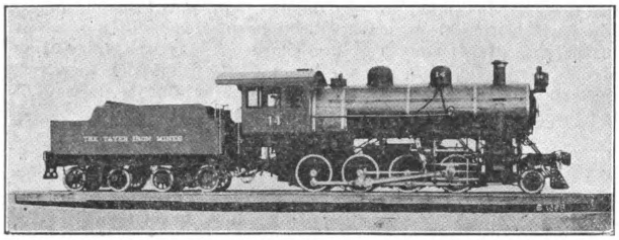
What Chinese Lines Chiefly Haul

Out of 13,000,000 tons of commercial business handled by the Government lines in 1916 nearly 8 000.000 was mineral products—coal principally. There were over 3.000 000 of agricultural products. Manufactures comprised 1,600,000. But the haul for agricultural products is so much longer than for coal that in ton kilometres the total for agricultural products was over 800,000,000 compared with 1,005,000,000 for mineral products. All told there were 2,300,000,000 ton kilometres of freight carried. The Peking-



TWO TYPES OF COVERED WAGONS, TAOKOW-CHINGHUA LINE. THE WAGON WITH HALF-OPEN SIDES IS USED FREQUENTLY FOR SHIPPING HORSES AND CATTLE. BOTH ARE READILY CONVERTIBLE TO PASSENGER USE, 3RD CLASS

Moukden carries nearly 40 per cent. of the entire mineral tonnage. The Tientsin-Pukow is the largest originator and carrier of agricultural products.



SOME OF THE INDUSTRIAL LINES HAVE VERY GOOD POWER. THIS CONSOLIDATION TYPE USED BY THE TAYEH IRON MINES WEIGHS 158,000-LBS.

It is rather difficult to generalize as to the character of the hauls upon the various lines beyond what has been indicated already. The mineral haul on the Peking-Moukden is principally between the Tongshan district and Chingwantao, with a considerable return haul of merchandise which proceeds on to Tientsin. On the Shanghai-Nanking there is a considerable business over the whole length of the line Woosung to Nanking, but principally the haul is between Shanghai and Wusih, Soochow and Nanking. On the Peking-Hankow there is a mineral haul of considerable length south from the Taokow-Chinghua and Kaifeng-Honan lines to Hankow, and north from the Chengting-Taiyuan line to Peking. The agricultural tonnage originates well to the south and moves to Peking and on to Tientsin. There is, of course, a long movement of rice parallel to the Grand Canal. But statistics do not show this for it is broken up between the several participating lines. The interested reader may perhaps be able to obtain some light from the following table:—

AVERAGE HAUL PER TON, 1916.

Name of Road	AVERAGE HAUL PER TON							
	Agricultural Products	Animal Products	Mineral Products	Forest Products	Manufactures	Material for other Railways	Service Stores	Total
Peking-Hankow ...	416	353	197	217	243	345	183	238
Peking-Moukden ...	190	174	121	103	151	140	115	131
Tientsin-Pukow ...	352	433	218	267	283	277	84	252
Shanghai-Nanking ...	224	229	245	261	218	83	138	218
Shanghai-Hangchow-Ningpo	62	112	160	147	111	45	81	94
Peking-Suiyuan ...	171	205	45	120	132	—	20	64
Chengting-Taiyuan ...	184	201	70	71	140	124	70	79
Taokow-Chinghua ...	87	66	76	55	104	—	17	75
Kaifeng-Honan ...	—	—	—	—	—	—	—	72
Kirin-Changchun ...	77	85	104	123	94	—	27	60
Chuchow-Pinghsiang ...	58	55	96	92	68	87	37	93
Canton-Kowloon ...	51	59	25	47	58	—	77	57
Canton-Samshui	—	—	—	—	—	—	—	9
Changchow-Amoy ...	19	18	15	9	18	—	23	19
Chinese Government Railways ...	260	272	124	154	183	152	89	155

The Origin of the Chinese Transportation Company

The railroad in England and America is responsible for the safe delivery of goods entrusted to its care. This is because of no kind-hearted impulse on the part of railroads there, but because the law compels them so to do. Many years ago in England when stage coaches first became common, it was a pleasant pastime for many nervy young gentlemen to hold up the coach and relieve passengers of their valuables. This became so common that it was fairly well understood that the stage drivers were conniving at the practice. Hence the English courts made it the rule that the stage coach must be the insurer of the passenger and of the goods of the shipper. When railways came into operation the same "common carrier" rule was applied to them, and it has so remained. But in China there was no such rule, and, of course, the railways have not voluntarily adopted it—except for pay. Their charges for such insurance furnishes one incentive for a shipper to send along with his shipment a servant to look after it. Some of the lines carry this servant free upon the wagon. One may see them lying on top of the loads in large numbers upon almost every train in China. The Shanghai-Nanking line which offers to carry at "Railway risk" rates charges such servant a third class passenger fare. For reasons above stated most of the shipments are in open cars, which offer no protection against theft. This again necessitates a watchman. If the journey is over more than one line, in most cases the goods must be rebilled at the junction point. This requires the presence of an authorized person to give shipping directions, pay freight charges, and supervise the transfer of loads. Then there is likin to pay, which requires personal negotiation if there is to be any profit left for the shipper. All of these things mean that a trusted employee must accompany the shipment.

No people with the commercial acumen of the Chinese would overlook an opportunity of this kind. The American express companies grew up for less than half the reasons given above. So in China companies corresponding to the express companies have come into being to supply the need of watchman, shipping and transfer agent, and tax dodger. They are commonly known as transportation companies. Frequently they are a branch of some large mercantile house. Sometimes they have as stockholders railway and government officials. They combine picul shipments into carloads and so secure the benefit of the lower rate. They often own large godowns and so can store products for which the owner has no facilities until wagons can be secured. With their official connections they can often secure wagons when other persons cannot. Ugly charges are often made in this connection, the same as in other countries where justice is not blindfolded. They can secure better terms from the likin inspector than the ordinary person, for in addition to their political influence they can make it worth the inspector's while, and he knows with whom he is dealing. A regular customer always is supposed to get preferred treatment. Besides, with their connections and branch offices in all important places they can make transfers of funds, provisions for re-shipment of goods and give better protection at a lower rate than can the isolated shipper. Frequently they conduct a banking business as a collateral line. On top of these advantages they have contracts with many lines—the Shanghai-Nanking, the Shanghai-Hangchow-Ningpo, the Tientsin-Pukow, the Peking-Suiyuan, and perhaps some others, for rebates ranging from two to fifteen per cent. of the regular rate depending upon the tonnage of goods shipped under their name. As a result the railroad gets practically no business at picul rates—these transportation companies gathering it all in, and combining it into car loads. At times it may pay the transportation company to offer a lower rate on car loads than the railway tariff provides in order to get tonnage enough to carry it up to a higher rebate percentage. Rebates on the Shanghai-Nanking line in 1916 amounted to over $81,000, or about 8 per cent. of total revenue from goods traffic. Upon that line transportation companies have been used by the railroad to secure competitive business. It is an extension of the compradore system into traffic solicitation.

Another advantage which the transportation company possesses in common with all large regular shippers is that of paying its freight bills monthly. Other shippers must pay in advance. After the close of each month several days are required to get in all invoices, and the time of making out the bill is something in addition. The peculiar genius of the Chinese for delay also serves well, so that a company doing a business of $100,000 a month is usually at least two months in arrears. In a country where current interest rates run from 12 to 20 per cent., two months' interest upon such a sum of money is a very tidy aid to a struggling concern.

There is no doubt that these transportation companies now serve a considerable public purpose. There is also no doubt that when the Government railways become organized into a system, with through billing arrangements, adequate car supply, common use of wagons, godowns, and proper control of its police forces that these transportation companies will disappear.

Who Makes the Rates?

A word as to the rate making authority. Theoretically the initiation of rates rests with the individual lines. Upon those lines with a very marked degree of foreign control the entire authority may be said to rest there. Upon all the lines the making

of rates is the function of the chief operating officer. The solicitation of traffic has not developed into an institution requiring a separate department, so far. In China railways cannot carry all the traffic offered them, so there is no need to solicit more. This statement is generally true, but not with respect to certain small lines. But as in other countries the shipper himself is as much interested in the rate as the railroad. As in other countries the absolute level of the rate is not so important as the possession of a rate more favorable than that enjoyed by a competitor. The result is that pressure is frequently brought to bear for such advantages, and no doubt there are many such rates which do not appear in the tariffs. At present the Ministry of Communications is the final authority on rate matters, but it would be too much to assume that political considerations never influence that body in its decisions. Hence while the foregoing paragraphs can be considered as descriptive, they cannot be guaranteed as anything more, or as final.

The rate level upon Chinese Government railways compares well with that in other countries. It is fostering a rapid increase of traffic in China. In spite of all the ills and plagues which have befallen this land during the past few years railway tonnage has steadily increased. The Shanghai-Nanking and the Tientsin-Pukow lines suffer a very severe water competition. But the certainty, the speed, the dependability of the railway service are bringing to it customers in ever increasing numbers. To be sure some very drastic rate revisions have been necessary. Probably no railway in the world offers generally lower rates than does the Shanghai-Nanking, whose average is under half a cent Mex. per ton per mile. The likelihood of damage in China is less upon rail than upon water. This will be surprising to shippers abroad until they witness switching operations in China. There is none of that crashing of cars together in Chinese yards, which make some foreign yards give forth a sound like a distant battle between artillery. Chinese engine drivers invariably handle the throttle carefully and there is little pulling out or pushing in of drawbars. To be sure, train speeds are slow which permits drifting in to stations and gentle startings. But when every allowance has been made the fact remains that the Chinese engine driver is a careful workman. He comes from the farming and artizan class. He has no family or political influence. Hence he is amenable to discipline. He gets good pay—five times that of an ordinary coolie, and is glad to hold his job. All this makes for good service.

Passenger Business

The relative importance of passenger traffic and goods traffic varies considerably upon the different lines. In the following table the lines are listed in order of highest importance of passenger business as of the year 1915.

PER CENT. OF REVENUES, PASSENGER SERVICE—PASSENGER, AND GOODS SERVICE—GOODS TO TOTAL OPERATING REVENUE.

Line.	Per cent. of Total Operating Revenue	
	Passenger Service Passenger	Goods Service Goods
Canton-Samshui	95.31	1.94
Changchow-Amoy	92.48	3.03
Canton-Kowloon	85.11	11.15
Shanghai-Nanking	71.13	24.62
Shanghai-Hangchow-Ningpo ...	67.72	28.60
Kaifeng-Honan	47.86	48.76
Tientsin-Pukow	41.65	48.68
Peking-Moukden	36.40	57.84
Kirin-Changchun	36.22	55.49
Peking-Hankow	25.25	71.55
Peking-Kalgan	22.95	69.74
Kalgan-Suiyuan	22.86	71.29
Chengting-Taiyuan	20.61	69.55
Taokow-Chinghua	17.12	80.43
Chuchow-Pinghsiang	16.66	81.37
Chinese Government Railways...	36.91	57.60

Passenger equipment differs as to style and finish upon the various lines, but these differences affect taste rather than anything material. On all the lines, three classes of equipment are recognized, First, Second, and Third. Upon the lines out of Shanghai and from Tientsin to Pukow, a fourth class, "coolie," is provided for. But the provision is nothing especial, consisting of open goods wagons or cattle cars, as a rule. Indeed, no inconsiderable portion of the third class travel is in such equipment, especially in the case of mixed trains, which serve local traffic needs. If passenger equipment were sufficiently plentiful, there is no doubt that much third class equipment would long ago have been impressed for certain forms of goods service. So the inference is not improper that third class travel in goods wagons is frequently quite as comfortable as in third class coaches.

Upon all the more important lines, the fast passenger trains carry restaurant cars, in which meals are served foreign style. Some of the more staple Chinese dishes may also be had on order. This branch of the service is supported almost entirely by the first class travel, other classes for the most part either carry food with them or buy from the vendors at the principal stations. Of such vendors there is always a horde at every station where the train hesitates. For the comfort of this class of travel, the more important stations provide gratis unlimited supplies of hot water. The stationary engines, as they appear to be to the uninitiated, seen upon the station platforms, are the boilers maintained for this purpose. They take the place of the ice water fountains found in American passenger depots and trains. With this hot water supply, the Chinese passenger can quickly brew himself a cup of tea—and then little else matters. The ubiquity of the tea pot, is attested by an incident, not infrequent, observed by the writer last summer at Peitaiho, the junction point for trains from the main line of the Peking-Moukden to the popular Peitaiho Beach. The branch line train was already twenty minutes late in departing. But the trainman who was making up the train could make no haste, for he had only one hand with which to manipulate the coupling lever, the other being occupied with a pot of tea.

First class carriages are of the coupé—private compartment—type. A partial concession is made to the American idea of open cars by placing compartments at both ends of some carriages leaving in the middle about half of the total car space for drawing room seats. Most of the coupés have seats convertible into beds at night. In a country where the travelling public is so cosmopolitan as in China, the privacy offered by coupés is highly desirable. As sleeping rooms, some coupés have two berths, others four berths.

Rates for the several classes vary considerably between the respective lines. The spread between classes and the variations between lines is shown in the following table which applies to the year 1916:—

AVERAGE REVENUE PER PASSENGER KILOMETRE.

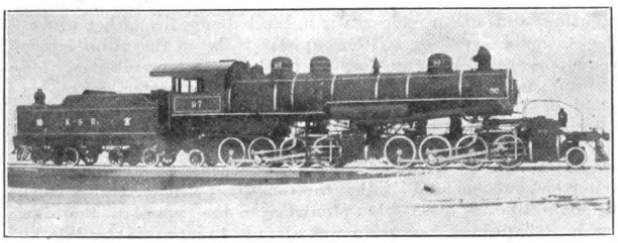
Name of Road	Average Revenue per Passenger Kilometre									
	Ordinary					Excursion				All Passengers
	1st	2nd	3rd	Coolie	All classes	1st	2nd	3rd	All classes	
Peking-Hankow	3.05	2.25	1.21	—	1.25	2.51	1.68	.28	1.56	1.25
Peking-Moukden	3.37	2.20	1.07	—	1.15	2.30	1.33	1.01	1.22	1.15
Tientsin-Pukow	3.75	2.51	1.25	.60	1.18	3.32	1.78	,65	.77	1.18
Shanghai-Nanking	2.65	1.46	.70	.45	.70	1.67	.82	.40	.48	.70
Shanghai-Hangchow-Ningpo ...	2.53	1.24	.82	.47	.79	1.53	.72	.52	.71	.79
Peking-Suiyuan	4.48	2.94	1.46	—	1.51	1.39	1.38	1.44	1.44	1.51
Chengting-Taiyuan ...	4.67	2.53	1.62	—	1.65	—	—	1.12	1.12	1.64
Taokow-Chinghua	3.39	2.12	1.18	—	1.20	—	—	.90	.90	1.21
Kaifeng-Honan	3.65	2.51	1.20	—	1.23	—	—	—	—	1.23
Kirin-Changchun	3.62	2.59	1.46	—	1.54	—	—	1.09	1.09	1.54
Chuchow-Pinghsiang ...	1.64	1.11	.75	—	.75	—	—	.49	.49	.75
Canton-Kowloon	1.88	.88	.64	—	.67	—	—	—	—	.67
Canton-Samshui	2.10	1.78	1.20	—	1.26	—	—	—	—	1.26
Changchow-Amoy ...	2.60	1.86	.95	—	.96	—	—	—	—	.96
Chinese Government Railways	3.24	1.79	1.06	.52	1.06	2.48	1.24	.61	.76	1.06

As in other countries, the lowest class contains the bulk of the travel. "Coolie" rates are offered only upon three lines. This class should be considered merely as a subdivision of third class. The following comparison between China and certain foreign countries upon the basis of passengers carried distributed by classes has a certain interest. The distribution would not be materially different in China if the basis were passenger kilometres.

	1st Class	2nd Class	3rd Class	Other Classes
China	0.7%	3.3%	87.5%	8.4 (Coolie)
Austria	0.4	5.8	92.7	1.1
France	4.0	19.0	77.0	—
Germany	0.1	7.4	42.3	50.2 (4th class mostly)
India	0.2	0.7	89.8	6.6
Japan	0.3	4.4	95.3	—
United Kingdom ...	5.7	3.9	90.4	—
United States No distinct classes.				

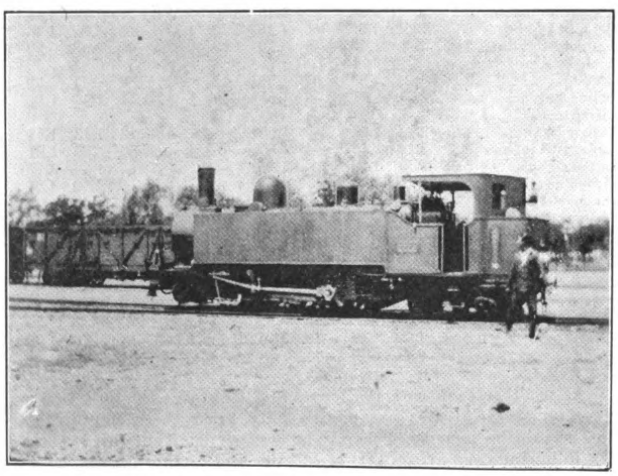
Train Operation

Chinese trains are operated under the staff system. While this system involves more delays than the dispatcher system, it insures a much higher degree of safety. No train can leave a station until it has received information that the track to the following station is

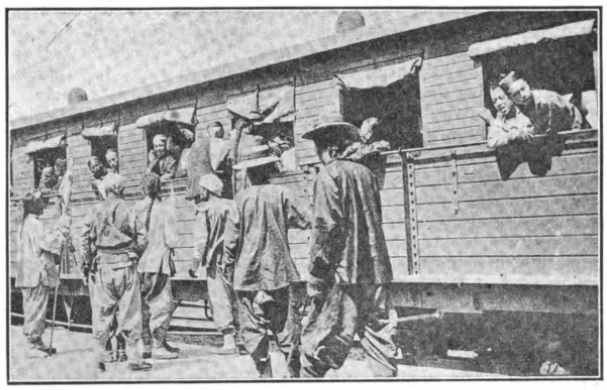


IN CONTRAST WITH THE "WHIFFET" ABOVE IS THIS MALLET CONSOLIDATION USED OVER THE NANKOW PASS BY THE PEKING-SUIYUAN LINE. WEIGHT 290,000-LBS.

clear. Enginemen handle the trains very gently, apparently having a very deft mechanical sense in handling the air-brake with which all passenger trains are equipped. Express trains are run between the important terminals, Peking to Moukden, Peking to Hankow, Peking to Tatung, Tientsin to Pukow, where connections are made to Shanghai. An average speed, including station stops, of 20 miles per hour is maintained. Between station speeds are limited to 40 miles per hour. This is guaranteed by the application of a speed register to a large percentage of the locomotives. Between Peking and Shanghai three separate lines are encountered, the Peking-Moukden, the Tientsin-Pukow, and the Shanghai-Nanking. Here we have a rudimentary start toward the system idea. These three lines have arranged train schedules so that through connections are made, with two changes of cars. At Moukden rather close connections are made with the South Manchuria trains for Port Arthur, Antung and Harbin. The connections other than these are considerably a matter of chance.



TYPE OF LOCOMOTIVE USED ON THE CHENGTING-TAIYUAN LINE. IN ROAD SERVICE THIS ENGINE RUNS CAB FOREMOST



THE NORTHERN RUSTIC PATRONIZES THE RAILWAYS, TRAVELLING THIRD CLASS

In many respects, however, the passenger service of the Government railways has progressed far toward system conditions. A circular tour ticket, good for two months, from Peking to Hankow, by boat to Nanking or to Shanghai over four different lines, and back to Peking viâ Tientsin has been in use for several years. Between Nanking and Shanghai the holder of the ticket has option of either the boat or the rail route. Passengers are allowed free baggage privileges to the extent of 120 catties—160 pounds—for first class, 120 pounds for second class, and 80 pounds for third class. Tickets are placed on sale only at principal stations however, and between these baggage may be registered, "checked." These circular tickets are sold at a reduction of about 30 per cent. on the local fares between the same points. A 30 per cent. reduction upon certain interesting side trips is open to the holders of these tickets up to their arrival at the appropriate junction point. At Tientsin, Shanhaikuan and Antung, baggage is subject to the inspection of Native Customs. Porters are at hand at all important stations.

A China-Japan circular tour ticket is sold, good for four months, between Shanghai or Hankow and Tokyo. This embraces arrangements with the South Manchuria, Chosen and Imperial Railways of Japan together with the Nippon Yusen Kaisha Steamship line. These China-Japan tickets are procurable also through the offices of the Canadian Pacific Ocean Service, the Pacific Mail Steamship Co., and the Toyo Kisen Kaisha.

Of late, the Ministry of Communications has been publishing guide books which contain full information concerning routes, fares, timetables, baggage, etc., together with matter descriptive of points of interest. These may be had upon application to the Ministry, Through Traffic Administration, and at leading tourist agencies.

Undoubtedly, China will soon become a Mecca for the tourist. This ancient land is still a land of mystery. Divided from the rest of mankind for thousands of years by mountain wall, desert waste and sea, she developed a civilization and a culture as antipodal to that of western countries as are the lands themselves. Everywhere the traveller finds his fundamental assumptions reversed. Every custom, every trait gives him a challenge. The thrill of discovery becomes the usual emotion. The desire for change can be gratified to exhaustion. Here the philosopher finds his basic premises denied. Social psychology seems contrary. In time one almost believes that the laws of physics are suspended. The historian may find the middle ages spread before him. The story teller has here an untouched wealth of fairy lore, adventure and biography. Chinese art is becoming vogue. Chinese architecture can show examples which were ruins when the mortar was still damp in Rhenish castles. There is a wealth of mountain peak and river gorge lit by an atmosphere of color which some day will be as well known in the galleries of the world as the Swiss Alps or the Arizona ranges. And above all there is the lure of China as the land of promise—placid, tantalizing, powerful; a land of intrigue, in transition, uncertain. It tempts the gambler either for wealth, or for reputation. It becomes the next great gaming table in world diplomacy and as such will have a fascination for those who would gaze upon the gamesters as well as for those who play.

Just what is Shanghai's function as the emporium of Central China? The following analysis suggests statistically the origins and destinations of the Shanghai import-export trade. Bearing in mind the figures just presented, which should serve as some indication of the immense volume of commerce pouring down the Yangtze past Shanghai's door, it seems safe to say the heading, "Chiefly from (to) Northern and Yangtze Ports," in nowise implies that the up-coast trade has anywhere nearly the importance of the river commerce. Excepting for the universal effects of the Great War—tonnage limitations, freight rates, and trade restrictions—which cannot be gone into here, the following presents a fair picture of prevailing tendencies:—

GROSS AND NET VALUES OF THE FOREIGN AND DOMESTIC TRADE OF SHANGHAI, ACCORDING TO ORIGINS AND DESTINATIONS, 1917.

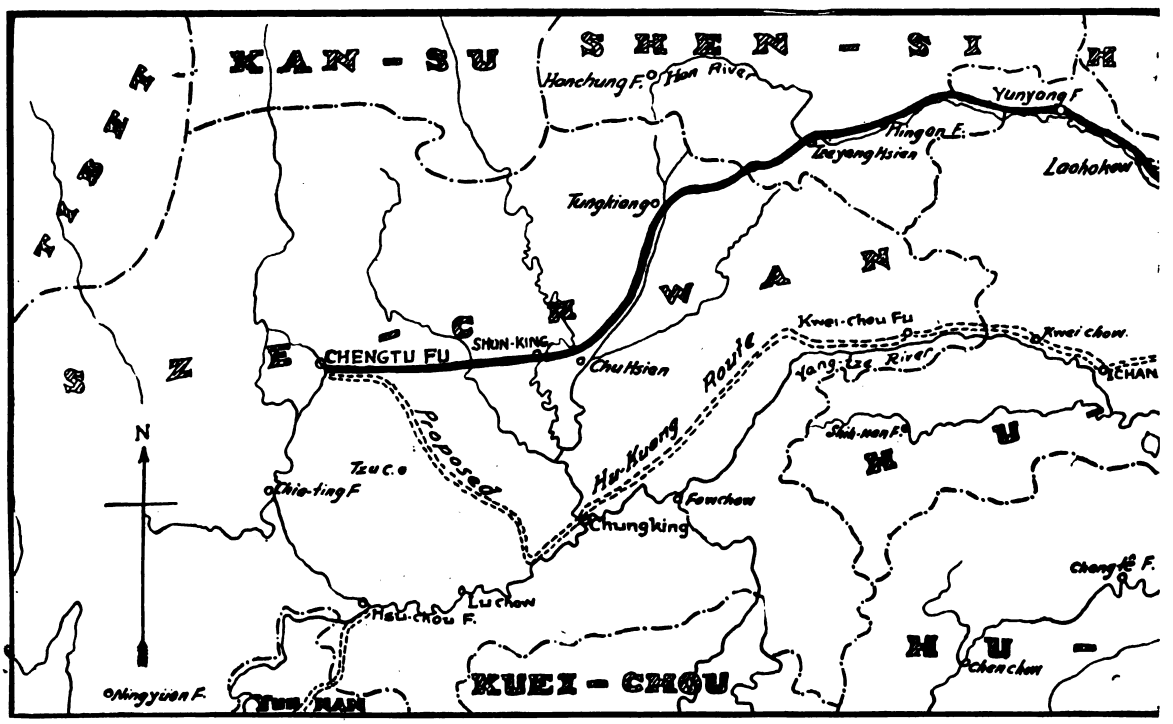
Hk. Tls.

Classification of Goods.	Gross Values.	Net Values.
FOREIGN GOODS:		
1—Imports from Foreign Countries and Hongkong	210,085,990	
2—Imports from Chinese Ports	4,604,029	
Total Foreign Imports...	214,690,019	
(a) Re-exported to Foreign Countries and Hongkong	8,037,819	
(b) Re-exported to Chinese Ports (chiefly to Northern and Yangtze Ports)	117,352,308	
Total Foreign Re-Exports...	125,390,127	
Net Total Foreign Imports...		89,299,892
CHINESE GOODS:		
Imports chiefly from Northern and Yangtze Ports	225,423,085	
(a) Re-exported to Foreign Countries and Hongkong	134,885,318	
(b) Re-exported to Chinese Ports	43,545,975	
Total Chinese Re-exports...	178,431,293	
Net Total Chinese Imports...		46,991,792
1—Domestic Produce of Local Origin, Exported to Foreign Countries and Hongkong	62,469,341	
2—Domestic Produce of Local Origin Exported to Chinese Ports	77,650,393	
Total Exports of Local Origin...		140,119,734
Gross Value of the Trade of the Port...	580,232,838	
Net Value of Trade of Port*		276,411,418

If this establishes the supremacy of Shanghai, it is equally the foundation of Hankow's prosperity. More than half of the foreign imports into Shanghai, we have seen, are re-exported to northern and Yangtze points; the greater proportion by far passes up the Yangtze, and Hankow's proportion is not small, probably accounting for 20 per cent. anyway of this Shanghai trade. In the case of the Chinese produce which Shanghai takes, a comparison of the figures in the foregoing tables would tend to show that Hankow must furnish a considerably higher proportion of Hankow and Shanghai. The steady development of direct

*Net Value = Foreign and Chinese imports less re-exports, and Chinese exports of local origin.

THE PROJECTED RAILWAY



The heavy black line roughly indicates the route of the projected railway to be built under contract with the Siems-Carey Railway and Canal and Chinese Corporation, work upon which was suspended shortly after the outbreak of war. The road between Nanking projected in connection with

There is under contemplation the construction of a railway* to enter Szechuan province from Sinyang, on the Peking-Hankow Railway, which, if constructed, will have a tremendous influence upon the future of China and revolutionize trade with her richest province. Such a line has been surveyed and pronounced feasible by the Siems-Carey engineers. Reference to the map above will show it as a black line running westwards to Chengtu from Sinyang. If this is built it will connect with the line under construction when the war broke out between Pukow and Sinyang, and from Pukow traffic will follow the line already operating to Shanghai. Even casual acquaintance with China will be sufficient to impress one with the great advantages of this project. It will open the most important western province, make it accessible from north, south and east China, by way of existing railways

* See FAR EASTERN REVIEW, February, 1917; August, 1917, "Taming the Yangtze Dragon"; July, 1918, "A Low Grade Route to Szechuan,"

trade between Hankow and foreign countries, showing every It is a striking demonstration of the economic interdependence indication of being more pronounced in the future, will work to the disadvantage of down-river entrepots. The trend in this direction is bound to alter the balance of trade in the Yangtze Basin; far-sighted business more and more will tend to establish itself in Hankow in order to participate in the coming extensive exploitation of the western provinces of China. Thus this relationship, at present so advantageous to Shanghai, cannot maintain its terms more than relatively; and the absolute position of this clearing-house for China's wealth will not become more favorable in the trade of the Yangtze Valley, looking forward for a generation of economic development.

Development and Port Potentialities

SHANGHAI.

Thus for trade with Central China, Shanghai is an indispensable base of operations. Its harbor is formed by the lower reaches of the Whangpoo, which empties into the Yangtze 13 miles further down; here is located Woosung, Shanghai's port of call for liners when tidal or cargo conditions do not warrant going up the Whangpoo, lighters being employed to load and unload. Within the harbor limits of Shanghai, the river bank on either side is protected by bunding and warehouse facilities are immediately adjacent.

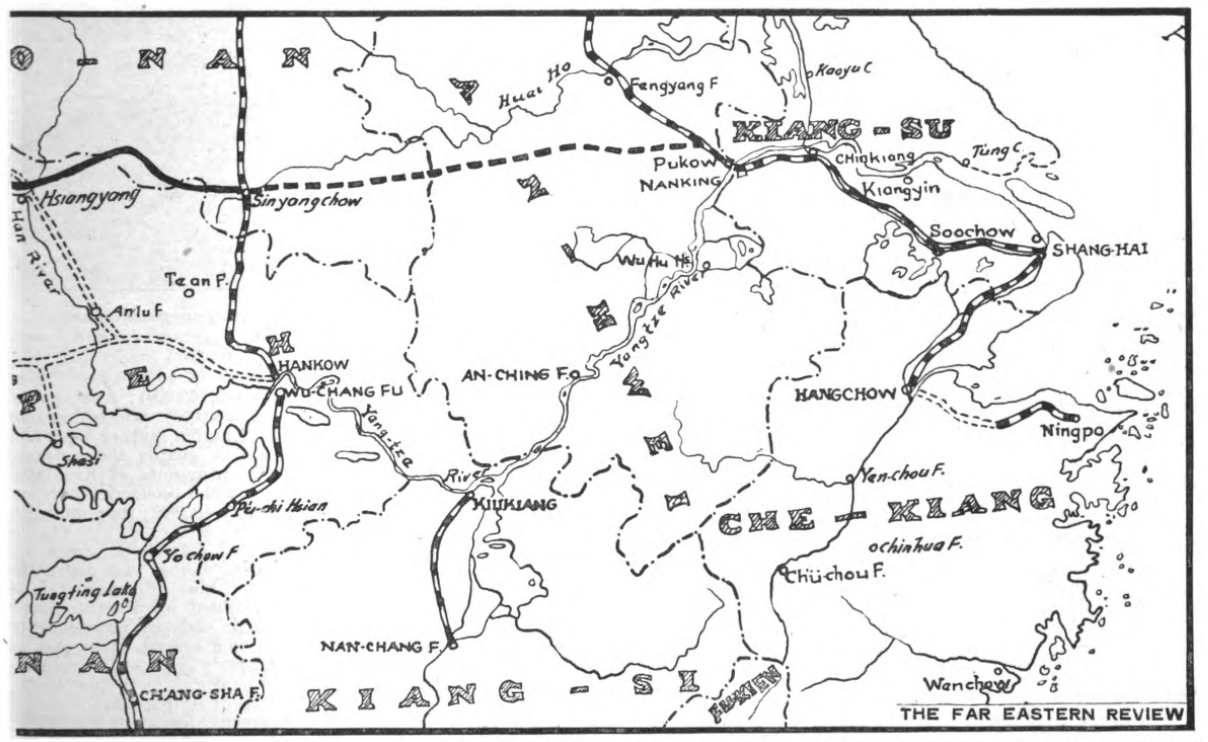
Immediately across from Shanghai lies Pootung; this is rapidly developing industrially and much of the river frontage cannot be had at any price. There are government holdings, mill frontages, etc., and a couple of shipbuilding plants. The Japanese recently have been especially active in increasing their holdings here as well as across the river. On the Shanghai side from Soochow Creek, where the Whangpoo turns sharply at right angles, to Hankow Road the Bund is parked and has no commercial use for any but small boats—a distance of a quarter of a mile. But up-river from the Custom House through the French Settlement to the China Merchants Steam Navigation Co., there is a succession of landings. While steamers up to 6,000 or so tons can berth here, this is devoted chiefly to river traffic coming in from the Yangtze. Further on comes the junk landings lining the native city up to the site of the Kiangnan Dockyard and Government Arsenal; there is 16 feet of water here.

Soochow Creek marks the beginning of large liner berthing. The creek itself is economically important for the junk trade, as its windings tap a valuable industrial portion of Shanghai. Below it, from the American consulate on, there are a succession of godowns, wharfage for the N.Y.K., Pacific Mail, China Mail, Jardines, etc., as well as an industrial frontage more fully developed than on the Pootung side This is the most desirable region but there is little opportunity for the acquisition of space and the prices are high.

All in all, the Harbor Master of Shanghai reports, there is little wharfage available. The demand is steady; he did not think that even this would be open to purchase long (October, 1918). One could get frontage if prepared to pay the price. That, however, must be met as the future holds little promise of a drop in value.

Shanghai is a community of more than a million souls—about 21,000 foreigners, with the Japanese a fast-growing element—and easily over 1,100,000 Chinese.

FROM SZECHUAN TO THE SEA.



Company. The blocked line between Sinyangchow and north of Pukow, indicates the railway which is being built in agreement with the British and Shanghai is in operation The double dotted line running eastward from Chengtu along the Yangtze to Hankow is the Hukuang Railway agreement.

and lines under construction, and in fact will put it in touch with European systems viâ Siberia. That it will affect the traffic on the Yangtze, which is now dangerous and difficult through the Gorges is certain, but that it will eliminate that traffic is not likely since the proposed line will traverse a region distant from that served by the present means of communication All passenger traffic from east of Ichang is certain to go by rail, even to Chungking, for it will be easier to enter Szechuan by rail and travel down the Kialing river, which debouches on the Yangtze at Chungking, and which will be crossed by the railway within navigation limits, than to go by the Yangtze.

Another railway is also contemplated to connect Ichang with Szechuan, viâ the Yangtze valley, and this line has been partly constructed and completely surveyed for some distance. It is part of the Hu-kuang railway system, but whether it will be built now that another route has been discovered remains to be seen. Construction work up the river valley will be extremely difficult and will test the best engineering skill, as well as be high in cost.

THE FAR EASTERN REVIEW

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Vol. XV. MARCH, 1919 No. 3

SHANGHAI, PEKING, TOKYO AND MANILA

A. L. TAYLER.

Tobolsk. This railway project also is not likely to mature for a considerable time, since it serves forest districts not in the greatest need of railway communication.

(13) *North Ural Railway.*—Various proposals have been made for a railway to cross the northern Ural Mountains and connect the Ob Valley with Archangel or some other port on the Arctic Ocean, thus giving the timber and other bulky products of western Siberia an outlet to European markets. This question of cheap transportation to tidewater is one of the chief economic problems of western Siberia and it is possible that the future may see the realization of one of these projects.

(14) *Kiakhta Railway.*—Plans have been put forward for the building of a railway south from Verkneudinsk to Kiakhta, on the Mongolian border, in order to tap the caravan trade across the Gobi Desert.

Present Transportation Situation

The foregoing is a brief outline of the railway lines in Siberia, the construction of which has been projected for the near future and in certain cases has already been authorized. It is evident that the present unsettled conditions render difficult the execution of these plans for railroad building on a large scale. The acquisition of the necessary capital and the securing of supplies and equipment present the chief problems involved. On the other hand, it is realized that the further exploitation of the great resources of the territory and the development of an export trade in Siberian products depends to a great extent on the provision of adequate transport facilities. It may, therefore, be expected that every effort will be made to carry out the construction of those railway lines most urgently needed, since capital invested in these undertakings will assist toward eventually paying of the debt incurred with foreign countries through the development of exports. The most pressing need of the present moment, however, is the restoration of the existing railway facilities to working efficiency by repairing the roadbed and providing sufficient rolling stock to enable the Transsiberian Railway to transport the goods urgently required in the interior of the country. The lack of railway cars and locomotives is one of the chief obstacles to the relief of the present economic situation in Siberia, and their provision demands first attention.

Siberian Railway Internationally Supervised

After considerable discussion, and some heartburning in certain quarters, an arrangement has been come to for international supervision of the Siberian railway, under the Presidency of Mr. Stevens. The agreements, etc., given below, as conveyed in *notes verbales* between the United States and Japan, speak for themselves:—

(1) A general supervision of the railways in the zone in which the Allied forces are operating shall be exercised by a special Inter-Allied Commission consisting of representatives of each Allied Power having military forces in Siberia, including Russia, the chairman of which shall be a Russian.

The following Boards shall be created and placed under control of the entire Allied Committee:—

(*a*) A Technical Board consisting of railway experts belonging to the said line for the purposes of administering the technical and economic management of all the railways in the said zone.

(*b*) An Allied Military Transportation Board for the purpose of co-ordinating military transportation under the instruction of the proper military authorities.

(2) The protection of the railways shall be placed under the military forces of the Allies.

At the head of each railway shall remain a Russian manager or director with powers conferred by the existing Russian law.

(3) The Technical Board shall elect a President to whom shall be entrusted technical operation of the railways. In the matter of such operation the President may issue instructions to the Russian official mentioned in the preceding clause, and he may appoint assistants and instructors in the service of the Board, chosen from the nationals having military forces in Siberia, to be attached to the central office of the Board and define their duties. Any of the Corps of railway experts may be assigned by him to more important stations. In assigning railway experts to any stations, the interests of the respective Allied Powers in charge of the military protection of such stations shall be taken into due consideration. He shall distribute work among the clerical staff of the Board, whom he may appoint at his discretion.

(4) The clerical staff of the Inter-Allied Committee shall be appointed by the Chairman of the Committee, who shall have the right of distributing work among such employes as well as of discharging them.

(5) The present arrangement ceases to be operative upon the withdrawal of the foreign military forces from Siberia and all the foreign railway experts appointed under this agreement shall be then forthwith recalled

The *note verbale* begins:—

The American Embassy is directed by the State Department to inform the Imperial Foreign Office that it is submitting for the consideration of the Imperial Japanese Government a suggested plan by means of which Mr. Stevens, acting through the present Russian managements and in the interests of the Russian people, may temporarily undertake the actual operation of the Chinese Eastern and Trans-Siberian Railways. The Government of the United States desires to emphasise the fact that Mr. Stevens and the Russian Railway Service Corps which assist him, represent Russia and not the United States or any possible interest of the United States as the United States has no desire or purpose to secure an interest in the Russian railways or to control them for itself.

A memorandum from the Imperial Japanese Government states:

The Imperial Japanese Government desire to express sincere thanks for the communication which the American Embassy made in the *note verbale* dated October 25 respecting the operation of the said railways.

They have noted with much satisfaction the assurance contained that the United States has no desire and no purpose to secure an interest in the Russian railways or the control of them.

The general memorandum begins:

Any financial responsibility involved in the plan of international administration of the Siberian Railways and the Russian interest in the Chinese-Eastern Railway is reserved for further discussion.

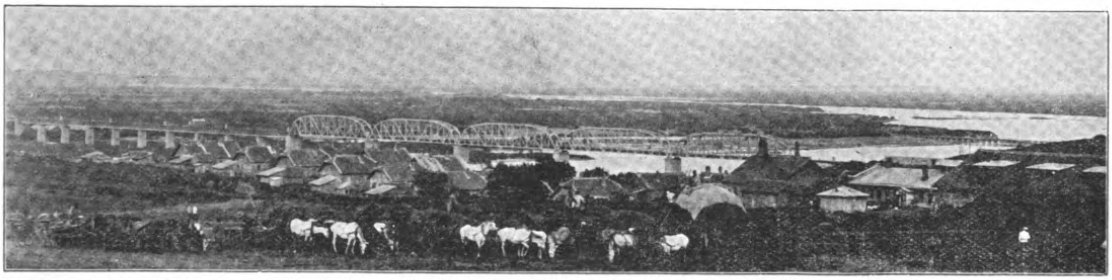
The word "interests" used in Clause 3 is understood to refer to the convenience of the respective Allied Governments and the United States and does not imply any political or other spheres of influence and, as stated very clearly in the agreement, the plan is to be interpreted as a sincere effort to operate the railways in the interests of the Russian people.

Under the proposed arrangement China's interests are fully protected and cordial co-operation on the part of the Chinese Government is hoped for.

The text of the agreement as submitted is subject to verbal corrections should such be necessary in view of possible errors in telegraphic transmission.

The following additional Memorandum was published as from Japan:—

(1) Viscount Uchida will forward the amended plan to Viscount Ishii, the Japanese Ambassador at Washington, with



BRIDGE OVER THE SUNGARI AT HARBIN

instructions to present it to the State Department, explaining that it is submitted on the understanding that Mr. Stevens, the American expert, is named as President of the railways.

(2) The Inter-Allied Committees shall consist of one representative of China, France, Great Britain, Italy, Japan, Russia and the United States: leaving the question of the Czecho-Slovaks to be discussed at a later date.

(3) Each of the above governments shall select one technical railway expert for membership of the Technical Board.

(4) The selection of Mr. Stevens as President shall not prevent his selection as a member of the Technical Board.

(5) Japan and the United States at once to advise the above associated governments of the agreed plan, including the understanding with reference to the selection of Mr. Stevens and shall request their adherence and cordial cooperation.

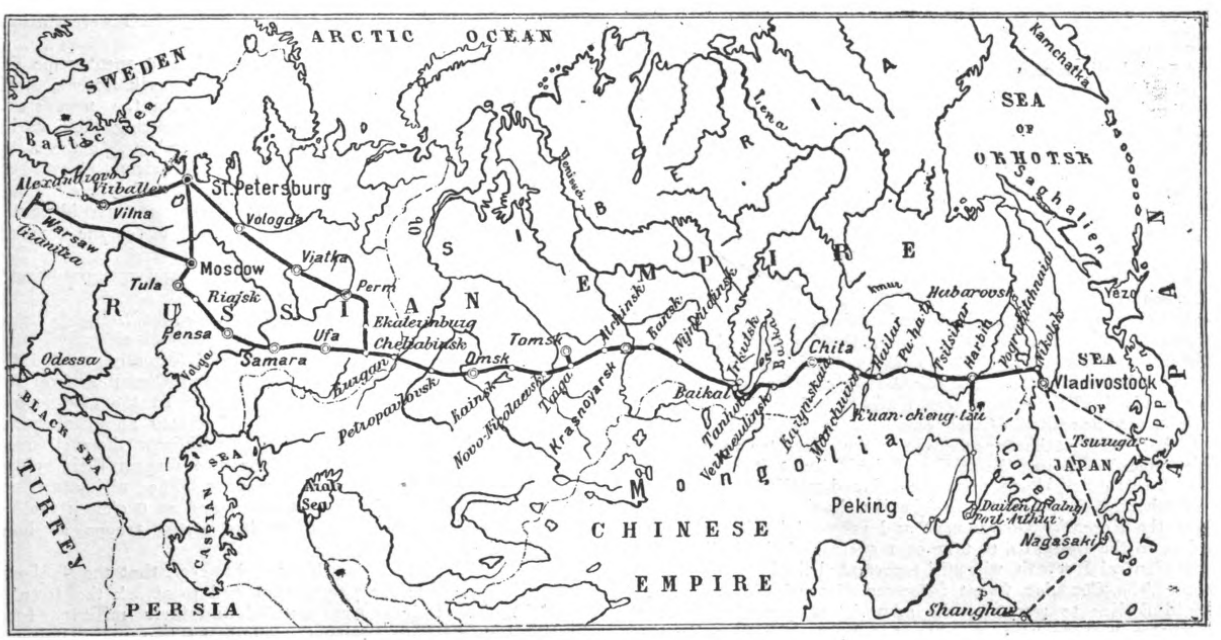
(6) This plan shall be interpreted as a sincere effort temporarily to operate the Chinese-Eastern and Trans-Siberian Railways in the interest of the Russian people with a view to their ultimate return to those possessing interests in them, without impairing their existing rights, and that, in entrusting to Mr. Stevens the technical operations of these lines, it is understood that Japan and the United States are both prepared to give him the authority and support necessary to make his efforts successful.

The Bolsheviks and the Railway Administration

How the Revolution in Russia of March, 1917, affected North Manchuria, and particularly Harbin and the Siberian railway, ultimately leading to results almost as revolutionary there as in the country of its origin will perhaps prove of interest, since the chaos thus brought about is responsible for the control now arranged for. During the months following the outbreak of the revolution robberies, murders and other outrages of person or property were of exceeding frequence, but they were confined almost exclusively to the Russian population, troubled by the social and political chaos into which the revolution had thrown them; and it speaks no less for the generally amiable attitude of the Russian populace toward foreigners than for the authority which the foreign Consuls at Harbin were able to exert, that so few foreigners were molested. By July the principal Russian officials of reactionary and oppressive tendencies had been removed from Harbin, while the Chinese Government had removed from office the incompetent Taoyin, Li Hung Moo, and put in his place the intelligent and cultivated Sze Chao Chang. More than any other thing, however, that prevented the terrors of anarchy descending upon Harbin was the ability of the foreign Consular representatives to solidly cooperate, and to support Lieutenant-General Horvath, Chief Administrator of the Chinese Eastern Railway, in his position as head of the Russian colony.

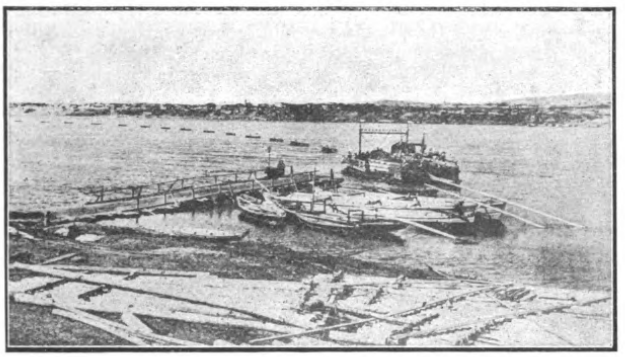
Prior to the revolution General Horvath as Chief of the Chinese Eastern Railway was practically dictator of the Railway Zone. The municipality of Harbin was administered by a Council of nine members elected by the Assembly of Delegates, themselves elected by the property owners of the alienated area. The Chinese authorities administered the two provinces of North Manchuria lying outside the Railway Zone, but in practically all cases involving Russian or foreign interests they were subservient to the Russian Powers. From participation in any of the activities connected with soverèignty, within the limits of the Railway Zone they were completely excluded. Chinese officials were permitted no voice in any matter that arose in the Zone, unless (and not always in such cases) it directly affected the particular interest of a Chinese citizen. The Chinese Customs was not allowed an inspection post at any of the railway stations except at the two frontier stations at either end.

The Railway authorities suppressed the news of the revolution of Petrograd until the tidings leaked out on March 16th, and within a few days the Russian community had accepted it as a reality. A score of fairly representative men got together and appointed themselves a Republican Executive Committee and assumed, under the proclaimed authority of the First Provisional Government, the administrative control of the municipality. General Horvath was asked by the Provisional Government to retain his position, with the title of Commissioner, and the population approved. The practical effect was that while previously Horvath had full power to issue obligated regulations in all except strictly municipal matters and no enactments of the Municipal Council could become operative except with his consent, now he could exert no authority except that which received the previous authorization of the Executive Committee.



THE TRANS-SIBERIAN RAILWAY

Then began the summary arrest by soldiers of their officers. The Council of Soldiers' and Workmen's Delegates at Petrograd had its replica here, and for some weeks the town was torn by collision between the authority claimed by the Harbin Executive



YENESEI RIVER AT KRASNOYARSK

Committee and that exercised by the Delegates; General Horvath meantime trying to keep equilibrium between them. While the Executive Committee attempted to legislate for everybody, Chinese and foreigners not excepted, the Delegates were busying themselves at persecuting everyone they could label "Bourgeois." They ousted all officials, military or civil, who were not to their liking, when they could agree among themselves on the action; and the only reason they did not banish Horvath was that they could not reach an agreement. The local police disappeared, and the Chinese authorities discreetly withdrew. Russian exiles returned from America and other foreign countries in great number to take part in the spoils of disintegrating Russia, and in Harbin enjoyed special freedom of speech and action.

The second revolution in Petrograd produced no special effect in Harbin beyond that of increasing the number of idlers and consequently the amount of confusion. Refugees poured in from Russia and soldiers from the deserted front filled the streets. Murders mutliplied: robberies and violations of women were not only a daily but an hourly occurrence. Every man carried a gun for his protection. The Railway authorities seemed to try their best to maintain order, but the lack of harmony between the various political factions and the utter absence of control over the individual soldiers made all their efforts futile. Wherever three or four soldiers gathered together they arrogated to themselves the functions of a government *de facto*.

By the end of August it became apparent that the Railway authorities were powerless to enforce law or maintain order. The Delegates (really Bolsheviks) had every other political faction thoroughly cowed, but were unable to exercise any control over their own units. It seemed plain that unless the local authorities could unite upon some strong restraining policy it might be necessary to ask for outside intervention. The foreign Consular representatives, who had hitherto always acted independently of each other, now organized themselves into a cooperative body. They endeavored to induce the nominal Russian authority, General Horvath and his organization, to take a definite stand in restraint of the soldiers, but the Railway Administration was completely disorganized. Efforts were then made to induce the Delegates to at least assume control of their own factions, but it was found that they had neither the experience nor the character to accomplish this, much less to run the affairs of the Railway Community.

These intolerable conditions continued until the first week of November, 1917, when the Bolsheviks, having seized Petrograd from the Kerensky Government and arrested its Ministers, sent orders to the Delegates to take over control of the Railway Zone from General Horvath, who still represented the Kerensky Government. The Consular Corps informed General Horvath that it would decline to recognize the administrative authority of the Delegates in Manchuria, but that it looked to him for full responsibility, and promised him its full support if he would take forcible measures to maintain the authority vested in the administration of the Chinese Eastern Railway. Failing this, the Consular Corps announced that it would probably ask the Diplomatic Body in Peking to request the intervention of China, or, if necessary, the intervention of international troops. General Horvath found himself powerless to act, and the Bolsheviks received the position of the Consular Body with defiance. On November 22nd the Consular Body drew up a formal program for the intervention of China or of international military police, which it demanded that General Horvath accept. Horvath asked for a few days in which to endeavor to reassume control with the submission of the Bolsheviks. Reinforced, however, by a telegram from the Lenin Government authorizing them again to take over control of the Railway Zone, the Bolsheviks demanded of the Railway Administration submission to this full authority, and on December 5th General Horvath weakened sufficiently to agree to a joint administration with them.

This the Consular Body declined to consider. In view of the reports that the Bolshevik Government at Petrograd was preparing to sign a peace with the Central Powers it was especially concerned with the action of the Lenin Government in establishing a Committee here which should have the monopoly of controlling all exports across the Russian boundary. The Chinese Government had now been aroused, and on December 5th the Taoyin, Sze Shao Chang, informed representatives of the Consular Body that the Chinese Government was prepared to oppose Bolshevik participation in the administration of the Railway Zone. Chinese troops had been hurried up from Kirin and were barracked within call. The next three weeks were days of temporizing, jockeying between Horvath and the Bolsheviks and the Foreign Consuls, with the Chinese authorities quietly making preparations under the direction of the Allied Ministers, to intervene by military force if called upon. On December 12th the Delegates physically assumed control of the Railway Administration and persuaded General Horvath to agree to act with them. The Consular Body arranged with the Chinese Taoyin to have 3,500 Chinese troops in Harbin by that evening. It did not appear, however, that the Chinese authorities could be relied upon; the situation obviously had their knees shaking. On December 18th the Delegates issued their famous Order No. 1, dismissing General Horvath and various other officials from their positions and appointing certain of their own members to succeed them. The Consular Corps immediately called upon the Chinese to bring troops into Harbin and to restore Horvath to his position. Two Chinese generals who had been sent up from Peking responded with about 7,000 troops, which were stationed in or near the Chinese town of Fuchiatien.

The Chinese, however, hesitated to act, and spent some days parleying with Horvath and with the Bolshevik leaders, Rutin, Slavin and Lutsku (afterward ringleaders in the massacre at Irkutsk, in Siberia), who meantime were putting their various measures into effect. On the night of December 24th the Acting Russian Consul-General called on the American Consul and stated that the situation was intolerable. The factions opposing the Bolsheviks were powerless, the Chinese were afraid to take any initiative, and the Railway Zone was under the command of unrestrained anarchists. He appealed to the Consular Body to take the situation into its own hands, and was prepared to ask for the exercise of force.

On Christmas morning, December 25th, the British, French, Japanese and American Consular representatives called upon the Chinese generals and the Taoyin and formally insisted that the Chinese move; and the Acting Russian Consul-General then appeared and suggested the use of force. In the afternoon of Christmas Day the Chinese formally delivered an ultimatum to the Bolsheviks, demanding that they withdraw their claims to administration in the Railway Zone and disarm their soldiers by 7 o'clock on the following morning. The ultimatum was delivered at 3 o'clock in the afternoon and at 6 o'clock the Bolsheviks, learning that the Chinese had 10,000 troops at hand, accepted the ultimatum.

During the night it was learned, however, that the Bolsheviks meant to repudiate their agreement and to attack the town at daylight. The Chinese were notified and their military forces hastily brought into position around the two main Bolshevik positions. Shortly after dawn the Bolsheviks were called upon to surrender; there was a show of resistance and a fight ensued which resulted in the surrender of the Bolshevik regiments short-

ly after 9 o'clock in the morning. Several soldiers were killed on both sides, but their combined losses did not equal the number of school children and pedestrians that were killed. That night and in the following three days the disarmed regiments were put on trains and sent beyond the frontier into Siberia. However, their leaders, Rutin, Slavin and Lutsky, were permitted to escape.

By this triumph of Chinese arms the Railway Administration was restored to nominal control of the Railway Zone; not, however, to its old authority. The power of the foreign representatives was realized for the first time by the Russian community, and their full control over the interests of their nationals completely admitted. The Chinese, for the first time since the treaty of 1896 alientating the Railway Zone, found themselves in the position of exercising sovereign rights within their own territory. They established military police throughout the Russian settlement, set up a Chinese Customs station at Harbin and other railway stations, with the power to examine for customs purposes such trains as they saw fit. With the approval of the Allied Powers they established a bureau for the examination of passports at Harbin and at the frontier stations, and placed an embargo on exports across the Russian boundary. The Russian stranglehold on North Manchuria had been broken at last.

The Railway Administration is still recognized by the Chinese and, pending the establishment of a substantial government in Russia, by the foreign representatives likewise, as the administrative authority over Russian interests in North Manchuria. Dominating it, however, is the sovereignty of China, with its military support ready at any moment to intervene and compel submission to the interests of the whole community should that be necessary. The functions of the Consular Body are exercised in harmony with, but independently of, both. A more complete revolution of conditions in North Manchuria could hardly have taken place.

Co-operative Societies in Siberia

The "Goles Primoria" gives some interesting facts about the Co-operative Associations in Eastern Siberia with especial reference to the Maritime Provinces, says the Vladivostok correspondent of the "North-China Daily News."

We find that the Co-operative Associations of Amur, Saghalien and Kamschatka provinces are united into five unions,

(1) The Priamurski Credit Association, the headquarters of which are in the town of Nikolsk-Ussuriisk. It was founded on November 9, 1917, and has for its sphere of operations the Primorski province. It gives its own members credit and buys agricultural machinery, stock, farm implements, twine, etc., on commission and also buys for its own members farm produce. Its credit with the Moscow-Narodny Bank is to the extent of four hundred and twenty-five thousand roubles. Its balance on May 1, 1918, was Rls. 663,647.

(2) The Union of Priamurski Co-operatives with head offices at Vladivostok; founded February 19, 1916. Sphere of influence is the Maritime Province (the Primorski province) and parts of Kamschatka and Saghalien. This union has for members 349 associations, consisting for the most part of Co-operative Societies together with some artels and other manufacturing associations. Its credit with the Narodny Bank amounts to Rls. 350,000 while its balance on October 1 was Rls. 5,131,150.

(3) The Amurski Provincial Union of Credit Co-operatives, whose head office is Blagovestchensk, with the Amur Province as its sphere of activities. Its balance on October 1, 1918, was Rls. 1,359,974.

(4) The Provincial Union "Amurski Co-operative," which also has its head office at Blagovestchensk and also works in the Amur province. But while the union mentioned above—No. 3—has affiliated *credit* societies, No. 4, has 254 Co-operative Associations affiliated to it. It keeps a stock of goods in its own warehouses and sells to its members. Its credit with the Narodny Bank is Rls. 300,000 while its balance on November 1 was Rls. 4,330,726.

(5) The Yct-Amurski Union of Co-operative Associations, with its head office at Nikolaevsk-on-Amur. It was founded at the beginning of last year and operates in the lower reaches of the Amur and part of Saghalien. It unites about forty Co-operative Societies and artels. It has a credit with the bank of Rls. 275,000 and its balance on July 7 was Rls. 474,414.

Big Co-operative Societies

This finishes the list of, so to say, local Co-operative Societies and unions. But the war, closing all avenues of egress and ingress from the west, left only Vladivostok open, and so from all the ends of Russia there was a never-ending stream of merchants and others flowing into this distant town on the hunt for goods of all kinds. And among these were the central Co-operative Societies which opened up branches at Harbin, Vladivostok and also in Japan, China and America. Of these the following are the chief:—

"The All-Russia Central Union of Co-operative Associations, or the "Centro-Coyuz." It exercises its influence chiefly in European Russia. It controls about five hundred provincial and district unions, having about 40,000 shops for the distribution of its goods, and reckons its subscribers at about 25 millions. Its branches are to be found in the following towns:—Moscow, Petrograd, Archangel, Murman, Helsingfors, Odessa, Rostowk-on-Don, Astrakhan, Samara, Simbirsk, Ufa, Tsaritsin, Saratow, Ekaterinodar, Omsk and Vladivostok.

It also has agencies in London and Shanghai, and in the near future intends to open agencies in New York, San Francisco and Kobe. At the present time the reserve capital of this union is about ten million roubles and its working capital about thirty. Its turn-over in 1917 was 250 millions and to date in the present year is more than 600 millions. From the beginning of 1916 the centro-Coyuz began to open its own factories, of which it now has about twenty, consisting of chemical, confectionery, tobacco, match, footwear, soap, thread, brick, some mills, and some fishery undertakings.

The peculiar conditions of Russian life, however, the revolution, disorganization of transport, absence of raw material, etc., have had an adverse influence on its undertakings and their output is not very great when compared with their size, being on an average only about sixty millions per annum for the last three years.

The "Zakupsbit"

The Union of Siberian Co-operative Unions, "Zakupsbit," opened in June, 1916, and unites 29 unions of Co-operative Societies of various kinds in Siberia and the Steppe country and 9,169 Co-operative Societies in the Rostow-on-Don district. Its members number about 2 millions and it controls capital to the extent of 20 millions. It buys wholesale for its affiliations, and gathers and sells their furs, wool, etc., and has its own factories and mills. Its head office is at Novo-Nikolaevsk with agencies in London, Moscow, Ekaterinburg, Omsk and Vladivostok, and sub-agencies in many other towns of Russia. Besides its London office, it has offices in New York, Kobe and San Francisco. The Zakupsbit started with its own capital of Rls. 93,642 in 1917 and finished the year with Rls. 2,166,914; in October last its capital represented 8 million roubles, while the turn-over for the ten months was Rls. 91,073.

Credit Unions

The Union of Siberian Credit Unions, "Sinkredcoyuz," opened in September, 1917, and unites 28 unions of Credit Societies and 1,100 credit and loan associations in the governments of Altai, Semipalatinsk, Semipiechinsk, Tomsk, Turgai, Yenisei, Irkutsk and Zabaikal. Its head office is at Novo-Nikolaevsk, with offices in Petrograd, Moscow, Ekaterinburg, Omsk and Vladivostok, while it also has offices abroad. It carries on the purchase and sale of farm products and machinery and has its own factories, foundries and mills. News has just been received that the

Objection number two is that the Tuchuns will not allow their men to be disbanded in the first place. Here is where the Central Government must have help. It will be remembered that the Consortium Group Banks have the support of their respective governments in any approved dealings which they are to have with China. If any Tuchun evinces any desire to prevent his government from carrying out its agreements with the Consortium Group, it is perfectly within the province of the Central Government to accept the assistance of the foreign Powers involved. A few British vessels on the Yangtze and off the coast, a detachment of American Marines, a few French airplanes dropping mustard gas bombs and following up with machine gun fire in support of the loyal Chinese forces, would soon bring such truculent braggarts to their senses. Their forces are utterly without defences against such forms of attack. Their men have only rice-bowl loyalty. The job would not be hard. The conflict would be very brief. And one lesson would be enough. The project needs only a little planning, a little resolution. There are abundant reasons why the Allied Powers should be willing to help China at this juncture, but they need not be detailed here. There is practically but one reason why they may not help her, and that is because she may refuse to be helped. There are people who will starve before they will accept charity, and in a way we admire them. There are wives who have been killed by brutes of husbands before they would admit to a brother the failure of their family life. Public sentiment hardly approves of that degree of pride. We know the pride of the Chinese people, of their reluctance to accept help from without in the settlement of their domestic difficulties. But would a Chinese business man refuse to accept a loan which would keep him from bankruptcy? How should the Chinese look upon help in the present emergency—from the standpoint of sentiment or that of good business? Besides, they have been accepting help of a sort—of a sort that sells the freedom of generations to gain a respite of a moment. Why not get help for a fair price, and in a way that will be effective?

Internationalization of China's Railways

Within a very short time it is expected that various matters pertaining to the international relations of China will come up for adjustment. The Paris peace conference will in great measure force this, and, if the Chinese peace conference amounts to anything it should certainly bring to the table all subjects which may escape the Paris conference and which may directly or indirectly affect the progress and well-being of the country. As foreign policy in China is to a large extent embodied in the various railway loans and concessions it is natural to suppose that they will receive early consideration. They constitute one of China's most important problems, not only because of the varied nature of the conditions under which the individual railways were built, but because it is becoming vitally necessary to have some settled policy established for their proper development. The lines which now operate in the country were constructed in a haphazard manner by different nationalities, mainly in satisfaction of political ambitions, and as a consequence there exist innumerable anamolies, and heterogeneity instead of homogeneity in management. Nominally all except the South Manchuria Railway, the Chinese Eastern Railway and the Yunnan Railway are under Chinese control, but the method of construction and operation were originally laid down according to the practice obtaining in the country of origin of the loan raised for construction purposes and not according to any standard for China. Only recently the accounting systems were revised and unified, but there standardization ends.

Prior to the war international jealousies prevented any serious effort being made to unify management or to systematize development. Agreements held by one Power or another were constantly being exhibited to prevent others from effecting expansion in particular districts, or even provinces, and with the curtailment of finances caused by the war the holders of agreements were compelled to suspend construction and even surveys. China herself could not lay down any particular system for future development, even if she desired to do so, because chief technical considerations concerned with expansion depended upon the good will of holders of agreements for lines already terminating at the chief ports and trade outlets. With the principal terminals for trunk lines already held it was difficult for any new combination of railway financiers to secure an entry for a comprehensive, commercially possible proposition; but now the war is over, now that the international family has found itself and is grouped under a League convention, old-time doubts and prejudices and jealousies in China will surely be abandoned. One strong reason for this so far as Chinese railways are concerned is financial. Holders of agreements for many miles of projected railway will not be able to find the money to build the lines, and it is inconceivable that a country like China is going to be condemned to stagnation solely because those who can find the money cannot find the opening to utilize it. British feeling is all for a revision of existing arrangements in order to permit of natural development, and the only way to effect such a thing is to put all the railway loans and agreements and concessions into the melting pot—pool them, in short. By doing this internationalization of the loans will be effected, and internationalization properly effected will mean that the people with the money will be able to participate on equable terms with the people with the agreements, and all will co-operate in future development.

In a future issue we will enlarge on the whole of this question. At this stage we merely wish to emphasize the necessity for internationalization, and the simplicity of it. Agreement between the government concerned in the loans would quickly lead to the establishment of working arrangements. A conversion loan would naturally be necessary. The lines already built under loan agreements or as concessions may roughly be assessed at £76,000,000, so a conversion loan of £100,000,000 would be sufficient to take over existing rights. Under the Chinese Minister of Communications a Committee of Management, a Board of Control, or a Railway Commission, or some such organization, could be established at Peking, with experienced and known technical railway experts to assist them, and under this body economies and improvements in management could be brought about calculated to net the Central Government much larger sums than they now secure, protect the investments of the bond holders, and provide the provinces with better service in the handling of both freight and passengers. Chiefly such a Board could control and develop extensions upon scientific principles, and enable the country to have and support the mileage of railways its population and latent wealth demand. Of the various foreign nations interested it is fairly certain that Great Britain, France, America, and Russia will be in accord with the proposal. What Japan will say is problematical, though the claim is sure to be advanced that the South Manchuria system stands on a different basis from any other for the reason that it was part of the spoils of war. It is generally known too, that Japan holds the system not only for its commercial advantages but also for its strategic value, and it is likely that the argument will be deduced that it must be retained by Japan solely to intercept possible aggression from the north. The answer to that is as complete as it is emphatic and obvious. If the railways are internationalized automatically an international guarantee is given against any possible form of aggression across the railroads. From a financial and economic point of view, too, it seems perfectly plain that in the legitimate development of commerce Japan would be better placed by having participation in all railway development, the supply of materials and the transport facilities afforded by a huge national system, than by a perpetuation of conditions as they now obtain. If the question of internationalization develops as there is every likelihood of its doing, then Japan will have to decide between intensive political railway development in a restricted sphere, and under conditions of great distrust on the part of the other Powers, on the one side, and, on the other, whole-hearted co-operation and participation in the many thousand miles of lines which will certainly be constructed in China within the next decade. Altogether nationalization seems to be the only solution of China's railway problem, but everything depends upon how far the foreign powers concerned are desirous of promoting commercial and industrial development in general and of aiding China to put her house in order in particular.

Since writing the above the question has been brought into the sphere of practical politics by a group of Chinese in Peking who wish the matter dealt with by the Paris Peace Conference. Strong opposition has been raised by other Chinese to the proposal, and as we go to press a warm controversy is proceeding, with the opponents claiming that they have managed to have the proposition shelved.

On Sunday, February 23, the People's Diplomatic Association at Peking held a mass meeting at which was disclosed the message sent to the Peace Delegates at Paris. The proposal does not attempt the internationalization of the railways, or even joint-control, as alleged by the opponents, and is calculated to abolish "spheres of influence" and make the "open door" effective. Peking telegrams declare that the Japanese interests are strongly in opposition to the movement. The proposal put to the Chinese Peace Delegates for submission to the Conference was as follows:

"All railways already constructed, now under construction or to be constructed under existing agreements by foreign capital or foreign loans shall be consolidated under one uniform management and their capital and loans shall be consolidated into a joint loan with the said railways as joint security.

"The Chinese Government shall employ foreign experts to assist the Chinese in the administration of the railways until such time as China shall have repaid the loan.

"All matters concerning transportation shall be under the control of the Ministry of Communications and subject to Chinese law."

The Recent Sino-Japanese Incident

The echoes of a statement made before the Peace Conference at Paris by the Chinese delegates, Dr. Wellington Koo, Chinese Minister at Washington, and Mr. C. T. Wang—who went to Europe to look after the interests of the "Constitutional," or Southern Government, established at Canton—reverberated throughout China to some purpose early in February. The delegates apparently took the opportunity to lay before the Peace Conference some of China's claims to the recovery and free exercise of her sovereign powers, and incidentally exposed in an unpleasantly frank manner the salient features of the notorious Twenty-one Demands, and other activities of the Japanese Military Party in China. Though the Military Party of Japan may endeavor at this late stage to convince the general public that it in no way sought to control China's attitude at the Peace Conference, the general public are likely to remain distinctly sceptical. No sooner did the Chinese delegates express themselves with regard to their country's grievances than the Japanese Delegates at the Peace Conference telegraphed to Japan requesting that some steps be taken in Peking to prevent a recurrence, or to obviate any action being taken not previously confirmed by them. How ever this request was submitted to the Japanese Minister by the Japanese authorities, how ever it was expressed to the Chinese at Peking, the fact remains that it is believed generally in China that the Japanese Minister, Mr. Obata, was forcible in his attitude, "rattled the sword in the scabbard," and was generally minatory in his speech with the Chinese acting-Minister of Foreign Affairs.

Mr. Obata called on the acting-Foreign Minister, Mr. Chen Lu, on Sunday afternoon, February 2, and the report circulated by the press as to the nature and bearing of that interview had the leading Chinese in the Treaty Ports in arms within forty-eight hours. It was originally reported by the foreign correspondents of Peking that Mr. Obata protested against the threat made in Paris by the Chinese Delegates to expose certain secret agreements, and against their attitude in acting independently of the Japanese delegates in matters relating to China, and that in doing so he threatened to penalise the Government. It was reported that he suggested that seventeen million yen outstanding with regard to a loan of twenty million yen for the "War Participation Bureau" would be paid the Peking Government if they agreed to meet Japan's wishes with regard to the Peace Conference and that if they did not wish to recognize the agreement then the loan would be cancelled upon the repayment of the three million yen already advanced. It was also further reported that Mr. Obata in dilating upon the situation stated that no help could be expected from Great Britain, which was engrossed with internal disturbances, and that Japan was near at hand and had an unemployed army and navy.

The circulation of this report, as can be imagined, produced an immediate response in the shape of an outcry throughout the country. The Southern Peace Delegates, and institutions of all kinds, flooded Peking with telegrams urging, and begging, and praying Peking to withstand the newest Japanese form of demand, and wires by the score were sent off to the delegates in Paris imploring them to stand firm and place China's case as fully as possible before the international delegates.

In general the Japanese Minister's visit, evil or innocent though it may have been, roused an outcry the very spontaneity of which caused certain Japanese to declare that it was the result of some sort of conspiracy, and some papers went so far as to endeavor to lay it at the door of the American Legation and Consulates. The absurdity of such a thing is obvious, and if the Japanese Military Party fails to read what is the actual character of the writing on the wall disclosed by the agitation among the Chinese then it will have none but itself to blame if Japanese commercial firms and Japanese national interests suffer as a result of actions which can be construed by the Chinese to be against their national interests. The Japanese Military Party should know now that a new outlook is before China, that the Chinese understand the attitude of the Allied Powers, the importance of the League of Nations, and the significance of the world-wide changes in international relations, and that their possible attitude and actions are not to be measured by old-time standards. On any point touching their national honor the Chinese are liable to spring to immediate action, because they know that a League stands ready to protect the weaker nations in their fight for justice, for freedom, and for the right to exercise their sovereignty. Sentiment in China has changed significantly of late, a fact which the aggressive party in Japan will do well to note, and new inspiration comes not only because those who have fought to make the world free for democracy have triumphed but because public opinion is now more easily formed in China; because the country is awakening; and because there is a wider knowledge of world policies. The spontaneity of the resent outburst, based though it might have been on wrong information—we do not say it was wrong—is nothing more or less than an indication of the turning of the worm, and the proverb is as old as the hills that the worm will turn sometime some day.

What was really at the bottom of what will inevitably be known as "the Obata incident," it is not difficult to surmise, but how much truth there was in the allegations, how much justification for the construction originally put upon Mr. Obata's remarks must remain in doubt, for the simple reason that the actors in the piece all combine to deny that Mr. Obata was in any way improper in his observations or that what was said was possible of construction as damaging to China. These denials might be quite genuine, but if they are not accepted by the Chinese at their face value the Japanese must not be surprised. The Chinese and the foreign nations do not forget the denials and tergiversation connected with the Twenty-one Demands; they have before them several curious changes of policy on the part of Japan during the past year or two, and above all they see how the Military Party of Japan has been openly supporting the militarists of China in their efforts to maintain control of the country free from the safeguards imposed by properly established constitutional government. Possessed of feelings of this kind the Chinese people are left cold when the Foreign Office at Peking denounces the statements issued by the press; they frankly disbelieve the announcement made by the Prime Minister of Japan, and they take it as a natural thing for the Japanese Minister at Peking to disavow the allegations made against him. The Prime Minister of Japan, before the Budget Committee of the House of Peers on February 17, expressed the opinion that the rights and wrongs would ultimately become clear by the revelation of the facts, and that he believed that "facts would never be influenced by fabrications." There are many desirous of seeing peace maintained and progress facilitated in this part of the world who will hope with the Premier that the agitation was based upon wrong information, but all those who know China also know that it will be difficult for Japan to have

system." The Chinese compradore guarantees the steamship company a certain sum per round trip, for instance:

Shanghai to Hankow: 10-day round trip. . ... Mex.	$2,000
Salaries and expenses	800
	$1,200
10 per cent. for passengers rice allowance	120
Net to steamship company	$1,080

This applies to the largest of river steamers with a third class capacity of five to six hundred. All fare collections above the contract guarantee go to the compradore as his profit.

The rates at which this business is handled are not stable. The compradore virtually makes his own rate, influenced, of course, by the rates being quoted by other compradores of steamers sailing about the same time. Also this business is solicited and controlled through brokers and hotel runners who are paid a commission.

On the inland lakes and canals the immense traffic is handled in small launches or boat-trains. These boat-trains are extensively used on the small rivers and creeks in the Yangtze delta. A steam-launch is employed to tow, perhaps, five or six shallow-draft boats, each of which is equipped with one long cabin in which are placed seats running crosswise with a centre aisle, much after the fashion of a railway coach. Each boat in the train has a capacity of about fifty or sixty passengers.

While the foregoing statistics are those applying only to passengers handled on steamers, it might not be amiss to mention that there is an immense traffic handled by junks, sampans and lorchas. These native craft are of curious design oftimes, such as those with the "twisting stern", on the Upper Yangtze, which enables them, according to the natives, to navigate the sharp turns in the Kungtan River. On the lower Yangtze the junk traffic is quite voluminous, as well as on the West River. Some foreigners travel by junk when steamer facilities are lacking, such as on the upper reaches of the Yangtze—the charge being, for instance: Chungking to Ichang, sixty Mexican dollars, for a boat accommodating three or four comfortably—or on various canals.

The local steamer lines in the coastal and river trade could probably stimulate first class travel by offering excursion rates or by an active advertising campaign. On coasting vessels one can be made fairly comfortable, though steamers are small. Because of the limitations in size and capacity of these coast boats, most of the traffic between Shanghai and Hongkong is carried by the ocean liners of the European and American services. The rates charged by the vessels on the run are at present slightly less than those of the local lines.

Passenger traffic on the Chinese railways is of immense proportions and to one unacquainted with China the figures are startling. An analysis of the business handled in 1916 is appended and the 1917 figures are reported to be much the same.

The FAR EASTERN REVIEW, "Ports of the Orient" number (February 1919) gives an idea of the facilities granted these passengers as well as other statistics pertinent to this traffic.

It will be noticed that the greatest density of traffic is in the vicinity of the Yangtze delta, with approximately five million known passengers travelling by boat, and over eight million travelling by trains on the Shanghai-Nanking, and the Shanghai-Hangchow-Ningpo Railways. It is estimated that the population of this region is about 448 to the square mile. The estimated population of Kiangsu province, wherein this traffic mostly originates, is 24,000,000. The region tapped by the railways and water-routes to which these figures allude, probably contains 12,000,000 souls. The West River, Canton and Hongkong and vicinity, is a close rival with about three and a half million travelling by boat, and eight million by trains on the Canton-Kowloon and Canton-Samshui Railways.

Taking the rough estimate of the traffic in the vicinity of the Yangtze delta, as compared with the population, it shows the average number of trips per inhabitant as about one per year. On the railways in the United States the average is about ten per year; the United Kingdom twenty-seven; France ten; and India 0.5. It is, therefore, obvious that when China's resources are fully and intelligently developed, and the vast hordes of labor are thereby permitted to raise their standard of living, passenger traffic will increase tremendously, as there is certainly room enough for its growth.

Peking-Suiyuan Railway Loan

A loan of Yen 3,000,000 has been secured from Japanese financiers for work on the Peking-Suiyuan Railway, bonds being pledged as security. This is the first time that the railway has been connected with a foreign loan, the Chinese always jealously guarding it as an untrammelled Chinese line. In addition, of course, an agreement with Russia bound the authorities of China not to pledge the line without giving their financiers the first option. Conditions to-day are such that Russia's government is virtually *non est*, and money cannot be secured from anyone else than Japanese financiers. The Oriental Development Company, a Japanese corporation, entered into an agreement on December 7, 1918 to supply Yen 3,000,000 exclusively for use in undertakings of construction and repair. The whole of this sum was deposited in a Japanese bank, and no portion is withdrawable without the authorization of the Japanese Legation. The following provisions were made for the allotment of the proceeds:—(*a*) Yen 1.259,000 was provided for the liquidation of an outstanding debt to a New York firm for 6,000 odd tons of railway material supplied; this sum has already been paid out from the Japanese bank to the creditor, in the manner prescribed, that is to say, from the bank direct to the creditor under authorization of the Japanese Legation, and has not passed through the hands of the railway authorities. (*b*) Yen 700,000 for outstanding transportation expenses of the foregoing material, paid out in the same manner as the foregoing. (*c*) Of the balance of Yen 1,000,000 a sum of Yen 100,000 has already been paid in Tokyo from the Japanese bank to a Japanese firm in settlement of an outstanding account for sleepers, previously sold to the railway. (*d*) The now remaining balance is reserved for similar payments when required in future, all disbursements being subject to the foregoing procedure and only possible on the full authorization of the Japanese Legation. It is stipulated that the administration shall, whenever it is necessary to obtain funds from abroad, first consult with the Oriental Development Company.

	1st	2nd	3rd	Coolie	Total	Revenue
Peking-Hankow	11,621	34,104	3,031,211	—	3,076,936	M.$ 4,377,404.34
Peking-Moukden	63,030	79,257	3,215,654	—	3,357,941	5,914,235.67
Tientsin-Pukow	8,571	15,956	1,738,317	900,350	2,663,194	3,860,739.05
Shanghai-Nanking	38,343	171,175	4,497,373	906,869	5,613,760	2,534,056.85
Shanghai-Hangchow-Ningpo ...	9,778	209,226	2,425,853	447,526	3,092,383	1,255,955.65
Peking-Suiyuan	6,525	13,567	787,514	—	807,605	841,419.91
Cheng-Tai	365	4,685	232,274	—	237,324	444,956.40
Taokow-Chinghua	1,411	1,427	113,870	—	116,708	123,295.11
Kaifeng-Honan	1,072	8,831	547,313	—	557,216	568,691.80
Kirin-Changchun	2,322	8,685	258,082	—	269,089	342,660.83
Chuchow-Pinghsiang	230	1,643	335,527	—	337,400	114,645.70
Canton-Kowloon	4,971	29,381	1,772,807	—	1,807,159	650,806.26
Canton-Samshui	45,912	519,433	5,949,265	—	6,514,610	889,651.98
Changchow-Amoy	279	1,129	205,300	—	206,707	41,520.74
Total	194,429	1,098,498	25,110,360	2,254,745	28,658,031	M. $21,960,040 29

This revenue represents 37% of the total from all sources. The average number of passengers handled per train is 201.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Nanchang-Kiukiang Railway.—It is reported that the Chinese owners of the Nanchang-Kiukiang Railway have secured a loan of one million dollars from Japanese sources to discharge their debts towards Japanese creditors.

Locomotives for S.M.R.—Seventeen locomotives of the "Mikado" type, manufactured in the United States, have been delivered at Dairen for the use of the South Manchuria Railway. As the locomotives are too heavy for rails of less than the 80-lb. size, they may not be serviceable north of Wafangtien for the present.

C. E. Ry. Resumes Express Service.—The Chinese Eastern Railway has resumed express train service twice a week between Manchouli and Vladivostock, with connections for Omsk.

Shimonoseki-Moji Tunnel.—A bill now before the Japanese Diet contemplates the construction of a 7-mile railway tunnel, of which one mile will be undersea, between Shimonoseki and Moji. Work would commence this year and be completed in 1929, at an estimated expenditure of 19 million yen.

S.M.R. Budget.—The 1919 budget of the South Manchuria Railway Company includes an amount of 35 million yen for new undertakings to provide for increased traffic on its lines. Of this amount 23 million yen will be set apart for rolling stock while the balance will be used on maintenance and improvement of way.

Proposed Elevated System for Tokyo.—A proposition to build elevated electric railway lines in Tokyo has been advanced by a Japanese syndicate. The application provides that a capital of 60 million yen will be necessary for the construction of four main lines on the third-rail system, and that the cost will be about three million yen per mile.

MINING

Platinum in the Urals.—Some time previous to the war 90 per cent. of the world's output of platinum was produced in Russia, the later falling off, which was very marked even before the war, being due to the exhaustion of the best-known areas in the Urals. In 1911 the Russian production was 300,000 troy ounces. In 1912 it had diminished to 185,381 ounces; in 1913, to 173,642 ounces, and in 1914 to 156,775 ounces. In 1915 the Russian output fell to 107,774 ounces, and in 1916 to 78,674 ounces, but no doubt the decline since 1914 has been as much due to the dislocation caused by the war as to the exhaustion of the deposits. However, due attention must be paid to the fact that Mr. de Hautpick, an authority of the Russian Imperial Government, some years back predicted the exhaustion of the Urals within a period of 30 or 40 years, and it is a fact that gravels which were left as unpayable in former years have now been treated, the increase in the price of the metal having made the treatment of these gravels profitable.

Anthracite Deposit Discovered in Korea.—A Korean newspaper reports that a rich deposit of anthracite coal has been discovered in Chilkak district, North Kyougsang province, and that official permission has been given for working it.

Liquidation of Chinghsing Mines.—The Chinese Government is liquidating the affairs of the German Chinghsing mines, Chihli Province. The collieries were opened in 1908, and have a capacity of 1,000 tons per day.

Han-Yeh-Ping Dividends.—At a general meeting of the Han-Yeh-Ping Coal and Iron Co. in December a dividend of $5.40 on extra special shares, $5.20 on special shares and $5.00 on ordinary shares was declared from the year's profits of about Tls. 3,486,000, leaving a balance of Tls. 1,989,000.

Fushun Collieries 1918 Output.—The 1918 output of the Fushun Collieries, Manchuria, is put at 2,433,900 tons against an estimated output of 2,720,000 tons.

Fushun Foundry's First Dividend.—At a meeting of subscribers of the Fushun Foundry it was announced that from the opening of business on June 3rd to November 30th orders valued at Y.500,000 were received and work to the value of Y.220,000 was executed, resulting in a net profit of Y.22,000, enabling the payment of a 10 per cent. dividend.

Asano Cement Dividend.—The Asano Cement Company has declared a dividend of 25 per cent. on its workings in the last term, which accounts for Y.1,141,875 of a total credit balance of Y.1,519,998.

Dutch Indian Oil Company Dividend.—The Royal Dutch Oil Company, which operates oil wells in Sumatra, Borneo, Java and Ceram, has declared a dividend of 48 per cent. on its operations in 1918. Six of the 31 oil concessions in the Dutch East Indian Archipelago on which the company awaited a decision on December 31, 1917, were granted in 1918.

Japan Petroleum Co.—At a meeting of the Japan Petroleum Co. a dividend of 20 per cent., accounting for Y.2,500,000, and a special dividend of 5 per cent., accounting for Y.625,000, was paid on the 1917 workings, while Y.1,458,938 was put into reserve and Y.2,310,532 was carried forward to the next term.

INDUSTRIES

Laou Kung Mow Cotton Mill.—The credit balance for 1918 workings at Shanghai was Tls. 113,292.84, of which a dividend of 7 per cent. accounts for Tls. 56,000.

Electric Plant for Pootung.—Shanghai Chinese have organized a company for supplying electric light and power in Pootung, the suburb on the opposite shore of the Whangpoo.

Hongkong and Kowloon Wharf and Godown Co.—The profit on 1918 working was $969,048.24 as compared with $873,144.63 in 1917. The net profit, after deducting directors' and auditors' fees, contributing $5,000 to charities, and paying for repairs, is $880,985.76. Adding the amount brought forward from last year, there is a total of $1,156,148.96 available for appropriation. Of this total a dividend of $6 per share will account for $360,000 and a bonus of $4 per share will account for $240,000; $400,000 will be transferred to reserve fund and $40,523.96 will be carried forward; while the remainder will be used in writing off properties.

Mitsui Spinning Mill Begins Operation.—Twenty-thousand of the 50,000 spindles of the Mitsui Bussan Kaisha No. 3 Mill at Shanghai were put in operation on January 6th.

Yangtzepoo Cotton Mill.—The Yangtzepoo Cotton Mill, of Shanghai, has declared a dividend of 7 per cent. on 5,000 preference shares, accounting for Tls. 35,000, and a dividend of Tls. 0.80 per share on 200,000 ordinary shares, accounting for Tls. 160,000, from a gross credit balance of Tls. 403,494.82 on its workings in 1918.

Kung Yik Cotton Mill.—The Kung Yik Cotton Spinning and Weaving Co., Shanghai, has declared a dividend of Tls. 1.60 per share on the workings of the last term, which makes a total of Tls. 11.40 per share over the last 8 years' working, or an average of 14.25 per cent. per annum.

Proposed Spinning Mill for Shanghai.—The Pootung Cotton Spinning Mill, a concern under promotion at Shanghai, proposes to begin operation with a capital of $1,000,000 in $10 shares, of which $5 will be paid upon application and the balance on the date on which operation is begun.

Kanegafuchi Spinning Mill Dividend.—The Kanegafuchi Cotton Spinning Company (Japan) proposes the payment of a 70 per cent. dividend on their workings in the last term, from a net profit of Y.9,739,960 plus a balance from the previous term of 3,816,230, or a total of Y.13,556,191. The dividend would account for Y.5,525,439, Y.4,380,752 would be carried over, and the balance would be disposed of by reserves, bonuses, etc.

Ewo Cotton Mill Dividend.—The Ewo Cotton Spinning and Weaving Co., of Shanghai, have declared a dividend of Tls. 17 per share on their earnings of Tls. 564,410.74 made in the past year. The shares have paid Tls. 107 in all in the past 8 years—an average of 26.75 per cent. Commenting upon the working costs in the past term, the chairman remarked that two items alone—coal, costing Tls. 131,000 more than in 1917, and interest, costing Tls. 23,217 more than in 1917—represent more than Tls. 10 per share.

Osaka Iron Works.—The Osaka Iron Works has declared a dividend of 35 per cent. per annum for the last term.

Button Factories at Irkutsk.—Two button factories have been founded at Irkutsk where not only horn, but also clippings of thin sole leather, are used as materials.

THE FAR EASTERN REVIEW

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Vol. XV | APRIL, 1919 | No. 4

SHANGHAI, PEKING, TOKYO AND MANILA

上海仁記路第五號

遠東時報

The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XV SHANGHAI, APRIL, 1919 No. 4

Unification of Chinese Railways

How the Political or Commercial Sphere of Influence may be Eliminated

Ever since mid-July last when Foch's counterblows began to roll back the German forces, it has been perfectly apparent to whomsoever would look that the Chinese railway situation was in for a review. The review is on. It has been unofficially proposed to associate all foreign interests represented in Chinese railways into one group, so that the Chinese Government may deal with it as a unit. The proposition has been given several names, "neutralization," "nationalization," "internationalization," "consolidation," "commercialization," "unification" and what not. The effort of its proponents has been to give it a term which would show the union of the various foreign interests and yet show that they were to be divested of all political significance. Opponents have done their best to use terms which would carry the impression that the foreign governments intend to confiscate and exercise sovereign control over Chinese Government railways. A poet can afford to ask "What's in a name?" But a politician knows better. A brief review of the nature and extent of the foreign interest in Chinese railways will assist in coming to a conclusion. Here and there a short railway has been built by a private company to connect its mine with a river or some other railway. Certain Provinces during a period of enthusiasm built short stretches of line, which, for the most part, either begin or end nowhere. Out of the profits of the Peking-Mukden railway the line from Peking to Suiyuan was built by Chinese forces. Upon these lines it may be said that there is no foreign investment interest.

Next come the principal Chinese Government railways, which have been built almost entirely out of funds borrowed abroad. The Peking-Mukden was first conceived as a mine facility, then developed into a Chinese stock concern, but has arrived as a line with two foreign mortgages upon it, one of which prescribes that until the mortgage is paid off, it shall employ certain designated foreign officers. The Peking-Hankow railway which was built under a contract providing for a very considerable foreign personel as officers, is still mortgaged, but the original mortgage was refunded by means of another which placed employment of foreign personel entirely at the discretion of the Chinese government so long as interest payments are met Then follow a few lines like the Tientsin-Pukow and the Hupeh-Hunan, upon which, although all the funds for construction were borrowed from abroad, the mortgagee has reserved no right to appoint or control officials beyond a Chief Engineer. In contrast to these are the railway from Chengting to Taiyuan, the line from Hsuchowfu westwards to Kuangtung in Honan province, and under construction to Sianfu and beyond (known as the Lung-Hai railway), and the Shanghai-Nanking, upon which the foreign bondholder has a right to name all the higher operating officials and these in turn have the right to discharge any and all minor officials In other words the control of operations upon such lines is almost entirely in the hands of foreigners.

So far as control over operations is concerned, there is not much to choose between these last named and the purely foreign-owned lines. However, the profits and losses of such lines accrue to the Chinese Government, whereas those of the Chinese Eastern (in North Manchuria) the South Manchuria, the Shantung and the Yunnan lines are the sole concern of their foreign owners. Then, too, on the South Manchuria and Shantung railways only menial positions are given to Chinese, in contrast with the Shanghai-Nanking upon which Chinese hold all the higher positions except a half-dozen or so of a technical or fiduciary nature.

Apart from these differences as to control of personel, the loans upon all the government lines are remarkably alike in reserving to the bondholding sydicate the privilege of making all the purchases of foreign materials, upon which it receives a commission. A further privilege, which is considered even more valuable, is that upon equal terms it may give preference to its own nationality in the purchase of such materials. Now "equal terms" is a rather elastic term, especially when the syndicate representative has the making of specifications. So the invariable result has been that the nationality of the line enjoyed a practical monopoly of the supply trade of that particular route. The further result is that upon each line there is a distinct national type of equipment, machinery and practice. Since there are British, French, Japanese and German mortgages upon the Chinese Government lines, that number of types is in use. This serves very effectually to emphasize the individuality of any line. It is a further fact that shop machinery designed to meet the needs of repairing equipment of one type, is not efficient in the repair of a different type. Furthermore, workmen familiar with one type are not "at home" when working on a different type. The result is that repairs are not made well and that the natural prejudice of employés against the "foreign" article is substantiated by its poor performance when improperly repaired. Out of this has grown a very definite opposition on the part of operating officials of the various lines to permit their wagons to move off the line, let alone enter any "common user" pool.

Less than a year ago the Ministry of Communications attempted to get the permission of all the principal lines for the creation of a wagon pool, so that wagons under load could move on to their destination without transfer of their cargo. While the Traffic Conference voted in favor of a modified pool, the Traffic Managers, when the subject was referred to them, absolutely refused to have anything to do with it. And, so long as these loan contracts are in existence, the Ministry of Communications will be powerless to effect this much needed reform.

Shortly after the birth of the Republic, steps were taken to amalgamate the various individual lines into a government *System*. Very properly, the first step undertaken was that of unifying the classifications of accounts, so that it might be possible to exercise some degree of supervision over the construction and the operation of the lines, even though the actual work were under the direction of the foreign syndicate and its appointee. Dr. C. C. Wang, who was in actual charge of that work, fully realized the difficulties ahead, and appreciated that the success of the project depended upon its persuasive power rather than upon the right or the power of the Chinese Government, under the agreements which it had made, to force any changes of the sort. Very wisely, he engaged expert neutral assistance from abroad, and with the help of Prof. Henry C. Adams, who had just completed a like task in connection with the seven hundred railways of America, he secured the consent of all the foreign Chief Accountants to standardize classifications of Capital, Revenue, Expense, and Financial accounts.

Acting upon the same principle, the Ministry of Communications has caused to be formed a Railway Technics Commission, which is charged with the duty of drawing up uniform standards for the equipment and physical property of the various lines. So far this Commission has consulted the individual lines only informally, and in a personal way. The training and skill of the individuals composing the Commission are not disputed. Possibly they may be able to devise designs and specifications which may be real compromises between English, French and other types now in use on the government railways. But they have no power whatever to compel at least half of the lines to accept these standards. No matter how skilfully the compromise has been worked out, the compromise type will differ enough from a given national type to make it more difficult and more expensive to manufacture. Under the intense competition of post-bellum reconstruction the home manufacturers will insist that they be treated as favorably as possible. The pressure which they can bring to bear upon the technical officers of the lines in China through the respective syndicates will leave the officers now in charge of those lines no option but to refuse to accept the Ministry standards and adhere to the old national standards. The Chinese Government is absolutely helpless in this matter, so long as the old agreements stand.

Manufacturers are not to be blamed altogether for this attitude. At present no line ever orders more than ten locomotives, or a hundred goods wagons, say, at any one time. An order of those dimensions will not justify any manufacturer in deviating from his ordinary standards. The Ministry of Communications may draw up uniform specifications and uniform designs until its filing cases are full, but it will still be as far away from uniformity in the actual material which is purchased as it is now. For the present purchasing agents are not compelled to buy according to any specifications but their own, and, if they wished to do so, they could not get the new designs in the market, which, under financial obligations, they are bound to patronize.

There is a program of new construction, which, if it goes ahead under the old terms, will perpetuate the bewildering confusion for an indefinite additional period If a change is ever to be made in these conditions, this is the time. Change is in the air. There is a willingness on the part of certain nationalities to make concessions to the general good.

If the Chinese market for equipment could be broadened by a real program of construction, there is hope that the objections of individual syndicates to a standardization of equipment could be removed. If the four thousand miles of Government lines could be increased within the next twenty years to twenty thousand miles, the larger orders for materials would make it worth while for a manufacturer to try to meet the Chinese specifications rather than to insist upon his own. Wherever the question has been asked, the invariable answer has been that a competitive market on twenty thousand miles with a Chinese standard specified would be worth more than a monopoly market upon two thousand miles (which is the most any nationality now has) with the home standard specified. Hence if there is ever to be interchange of rolling stock on a large scale, through shipments of goods, and the other features which will make of the Chinese railways a real system, some form of co-operation must be worked out so as to induce future construction on a large scale and the giving up of monopoly privileges on several of the present lines.

Unfortunately, the outlook for future construction is not bright. The political situation both internal and external is too unstable. Internally, the Chinese Government is unable to enforce any of its decisions or to give protection to surveying parties, operating lines, or operating officials. The Managing Director of one government line, who endeavored to exercise his authority, was summarily ejected from the train by soldiers, partially disrobed, and subjected to a most undignified beating. He fled and has not returned to his post. The soldiery rides first class in space which civilians have paid for. Goods wagons are appropriated for living quarters by the rank and file and for the carriage of private goods by higher officers. Under such conditions no banking group will lend money to build railways in China unless at the same time it can garrison the line with soldiers of its own nationality. The only building in China during the past three years has been on that basis

Externally, the financial situation is bad. The world war has left a great task of reconstruction. All continental Europe will be engaged upon that for years. Russia and Siberia now appear in the world market seeking funds, and the capacity of the vast area which they represent to absorb profitable investment is only dimly appreciated. Mexico has suddenly realized that she must have assistance for development. The South American nations are conducting a propaganda in the hope of diverting capital to their development. In all of these countries the terms offered put few limits upon the possible profits. The principle underlying their offers is that the country profits from the introduction of the new enterprise, and that therefore the enterprise may be free to take all the profit that "the traffic will bear." In most of these countries conditions are becoming stable. While many are depressed over the Russian situation, there is every hope that another season will see quiet restored. The Russians are capable of organization. All of this puts so much competition in China's path towards funds, that on the pure investment basis she will have to wait her turn.

Besides, where can anyone build in China? French and British agreements as to routes conflict in Kiangsu British and Japanese agreements conflict in Fukien. American and French agreements conflict in Kwangsi. British and American agreements conflict as to routes to Szechuan. American and Russian agreements conflict as to extensions of the Peking-Mukden line. An American agreement conflicts with Japanese

CYCLIST POSTMEN OUTSIDE CHINESE POST OFFICE, SHANGHAI

The C.P.O. has 300 Postmen in Shanghai, 160 of these being mounted on cycles, and the number of articles delivered daily often exceeds 100,000. The C.P.O. in Shanghai has 22 Sub-Offices and 160 Pillar-Boxes, and employes over 1,000 men in this city alone.

and Russian agreements in Manchuria. What chance is there for any systematic construction under a condition like that?

During the past twenty years only six thousand miles of railway have been built in China. Why? Not from lack of room, not from lack of money; but because every national interest was blocking every other national interest. During the past ten years a bare thousand miles of line have been built. Under any ordinary conditions, a thousand miles would have been built every one of those ten years. No, the prospect for new construction, for a broader market, for merging the government lines into a national system is not bright.

But there is a political phase to the subject that is perhaps more alarming than the economic. China has always looked upon these railway lines built by foreign loans as a possible source of danger. Indeed, many of them have been built so as to give the builder color of contol over the territory served in case China finally disintegrates. One nation which has acquired railway interests in China actually garrisons with her own troops the lines which she controls. To add branch lines and connections to the lines already built would by so much extend and solidify the authority of the foreign power concerned within Chinese territory. Whatever fiction may be set up in the agreement with respect to the line being a government line, the property of and subject to the jurisdiction of the Chinese Government, if foreign troops are actually statoned at all the strategic points such as Tsinan, Mukden, Hankow and the like, the fact is that China has lost control. A desperate, tottering, money-mad ministry may be willing for a price to extend and continue such a condition, but the Chinese people are not.

A considerable foreign element not only fully sympathizes with the Chinese people in this attitude, but also itself views the situation with considerable anxiety. There is no use blinking our eyes to the fact that Japan is determined to have a prominent position upon the Asia mainland. She is not satisfied with Korea. She must have a wider field At home her people are restive for food. Food cannot be bought without a market for Japanese goods. That market should be found in China, but at present is of small proportions due to the low purchasing power of the Chinese people. Besides, there is no plentitude of Japanese goods, because Japan is very short of iron and other raw materials. Those also should be obtainable from China, but at present are not. Hence Japan has fully made up her mind to go over and get them. She is about it. This program of aggression comes so squarely in conflict with the constructive program of other nationalities that the consequences appear to be very serious.

That Great Britain will maintain her own positions goes without saying. She has a fairly consistent record on that point. But France, while still a world power, will be so engrossed with her domestic problems of reconstruction that she will probably not care to take an aggressive part in China affairs. Her financial representatives are known to be in the United States seeking financial alliances which will permit her to complete her program in China. The very evident community of interests of the British and the Americans in the Peace Conference at Versailles has its counterpart in the close association of Americans and British in China. Anglo-American Associations are being fostered very successfully, and there is every reason for predicting that combinations can be effected in the few instances where British and American routes collide. The evident alignment, then, is a more or less formal alliance between British, French and American interests as opposed to Japanese.

Hitherto, it has always been expected that when any program in China came in conflict with an American proposition, the Americans would more or less gracefully yield. This happened in the Peking-Hankow case, the Tienstin-Pukow, the Canton-Hankow, and the Chinchow-Aigun agreements. America was supposed to be satisfied with the friendship of China while others would be satisfied only with some part of China. But this rating of America in Chinese affairs will have to be revised also. America is committed to the "Open Door." This policy stands as a younger sister to the Monroe Doctrine. Before joining in the Great War, America resented the invasion of Belgium, she was horror-struck at Hun atrocities, but she did not strike until Germany presumed to tell her that certain lanes in the sea her ships might travel, and certain they might not. Then she hesitated not a moment but leaped into the battle with an amazing revelation of unanimity and strength. Now, when some nation proceeds to tell America that in certain parts of China she may trade and in certain parts she may not, we may expect to see a similar demonstration of what America can do when her temper is aroused. And remember that America is now fully armed and many of her war horses are champing at the bits.

If the British-American-French combination is actually consummated, there will be little difficulty in confining the activities of Japan to the Liaotung Peninsula. The Chinchow-Aigun line which America has contracted to build will prevent Japan from penetrating further westward. By the judicious handling of rate levels, in which American railway men have had nearly a hundred years of highly competitive experience, the value of the South Manchuria line as an investment could be considerably impaired. Indeed, such a rate war would be the very logic of the situation by way of improving the earnings of the Aigun line if America insists on building it. It appears, therefore, that the whole situation is in the hands of the Americans to make or to mar. But in harmony with President Wilson's policy as expressed in the League of Nations, Americans are urging that the Japanese be admitted to the combination mentioned above and that provision be made for the representation of other nations whenever such signify a desire sufficiently to justify participation in the development of China. To this proposition, it is understood, British interests have given a hearty welcome.

But the attitude of Japan towards China has been envisaged so long in terms of armed intervention and conquest, that it has become a habit of mind with her statesmen. The German advance of last Spring convinced her leaders that a German victory was inevitable, and so the sudden turn of events left them confused and unable to revise their policy with any degree of confident decision. Hence, Japan finds herself in a position where she is likely to be challenging 90 per cent. of the sea power of the world, a position which might deprive her of four-fifths of her foreign market and almost her entire supply of iron and steel, yet she persists in her old attitude of brow-beating China for concessions which have already been promised to others.

Out of this situation the idea of international co-operation as opposed to international competition gradually welled into expression. Just where the idea started no one quite seems to know. Like Topsy it appears never to have been born,—"'des growed." A chance word at the club, conversations at dinner tables, discussions of the League of Nations—all these finally have converged into a more or less definite thought with respect to China and her railways. There was earnest discussion among forward Chinese of rank and ability immediately after the signing of the armistice. For reasons, political in part, racial disinclination to be direct, and perhaps hopelessness also, these men did not make public their opinions, but let the plan appear to come from foreign sources. Several outlines have appeared, none of them quite alike, but all of them the same in principle. All of them represent foreigners' attempts to interpret the Chinese situation. None of them appear to be quite successful in doing so. Yet they may prove very useful as a basis of discussion without which all talk is bound to be aimless.

It will not be easy to satisfy both the Chinese and the foreign point of view. But there are a few general principles upon which both sides can agree, and from these it should be possible to work out something practicable.

Both foreigners and Chinese want more railroads: Chinese, in order to improve the condition of their people: foreigners, in order to increase trade.

Both foreigners and Chinese want railroads to be operated efficiently; for efficient operation means rapid growth of railroads, and better service to the immediate patron.

Both foreigners and Chinese believe that in order to get efficient operation of Chinese railroads, the security of tenure to the employé and the opportunities of promotion must be such as to encourage him to look upon railroading as a life time profession and to devote his best efforts not only to his present job but toward preparing himself for greater responsibility. Therefore, both foreigners and Chinese believe that family and political influence must be removed from the service by the establishment and enforcement of an impartial civil service plan. Naturally, certain high officials who can maintain themselves in position only by alliances, do not favor depriving themselves of

this source of bestowable favors, and these men are able to make their voices heard above the crowd

Both foreigners and Chinese believe that in order to get efficient operation of Chinese railroads, the elemental principles of organization must be observed. One of the most elemental principles of organization is that each man shall know what his duties are and what they are not. In a concern where the numbers employed run into thousands, unless there is a clear definition of duties, there is a great waste of effort, friction, and considerable neglect of duty. Therefore, both foreigners and Chinese believe that on Chinese railroads there should be worked out a standard form of organization, with the duties of each position defined A second elemental principle of organization is that it must be possible to locate responsibility. Unless the means be provided for punishing incompetence and maladministration and on the other hand rewarding peculiar skill and diligence, discipline is impossible. A railroad is often compared to an army. Without discipline, there are no victories. On certain lines in the Chinese system, the foreign administrative forces always shift the blame to the Chinese personel: the Chinese put it upon the foreigners—and both are right. "No man can serve two masters" saith the Scriptures, and modern business proves this Scriptural truth over and over again. Therefore, both foreigners and Chinese believe that the dual system of administration must go. Where there is a foreign chief he must be chief; if a foreign chief is not wanted, a Chinese must be actual chief. A third elemental principle of organization is that with every responsibility placed upon an official, a corresponding opportunity must be given. If an official is responsible for the safe and expeditious movement of trains, he must be given such power over the men who actually handle the trains as to enable him to ensure movement according to his orders. If he is responsible for the correct paying in of funds from sale of tickets and goods transportation, he must have sufficient power over the men who actually handle these funds to ensure their obedience to rules formulated for that purpose. The best rules in the world are not self enforcing. Hence, the responsible official must be able to do more than scold, more than report improper conduct. Saying, "Naughty, naughty" never stopped a station master from squeezing. The responsible official must be able to remove such a delinquent station master and be able to appoint in his stead someone whom he knows or thinks he knows to be competent and honest. Hence, both foreigners and Chinese are in favor of a duly authorized system of departmental responsibility, giving each chief the power of hiring and discharging his subordinates; due safeguards being provided against abuse, and certain rules regarding test of the fitness of candidates being prescribed.

A clear understanding of these principles is fundamental to all arrangements for future co-operation of foreigners and Chinese. If we follow them out to their logical conclusion, we shall arrive at considerable of a change in the organization of the present Chinese lines.

It is admitted by all unbiased observers, that there is now quite a considerable body of experienced Chinese upon the several lines. There is also a growing body of men with all the technical education necessary for the more responsible positions, but whose experience is not wide, and whose capacity for organization and leadership has not been tested sufficiently to make them a safe risk. The older Chinese group find themselves balked of their highest ambitions by the presence of foreign technical experts. The younger Chinese group needs the tutelage in discipline and organization which only the foreigner can give. It has always been one of the terms of foreign loans for railway construction in China, that the higher supervisory officers shall be foreigners as long as the loan lasts. The result is that as long as there is a dollar of loan money on the line, the foreigner stays. It has been proposed therefore that if the entire system of railways is brought into the co-operative scheme, as fast as the Chinese investment grows, the length of line over which Chinese General Managers may be appointed will be extended. For example, take the Shanghai-Nanking and the Kaifeng-Honan lines. Up to the last year of the loan upon each of those lines, each will have its full complement of foreign officers, but under the combination plan, when half of the Kaifeng-Honan loan and half of the Shanghai-Nanking loan is paid off, one or other of these lines can be placed under the exclusive command of a Chinese general manager, with a complete Chinese staff, from Chief Engineer to track coolies, if he so desires. There would be no objection to his employing foreign technicians, if he wished to do so. But if he did hire foreigners in any technical capacity, under the rules suggested above, the foreigner would have the same powers, no more no less, as the position carries with it upon other lines. In other words, the Adviser system is considered *passé*. If the Chinese needs an adviser, he is not fit for the job. If he is fit for the job, he does not need an adviser. It is believed that by placing Chinese in full charge with full responsibility, protecting them with definite civil service rules, giving them foreign competition on other lines, they will rise to the occasion, demonstrate their worth, and produce results as favorable to the foreign investor as if his own representative were in control. But without the standard set by the foreign official to act as a measuring stick, without the protection of civil service rules and defined responsibilities and powers, neither Chinese nor foreigners believe that Chinese officials can resist present political and family pressure.

Both foreigners and Chinese believe that efficient operation and efficient service require that all the railways in China be operated as much as possible as a unit, so that it may be possible soon to make through shipments from one end of China to another, and so that connections between important trains are made regularly and without loss of time. In order to do this, there will have to be some co-ordinating power which is sufficiently versed in large scale operations to make practical arrangements. Uniform types of equipment are as necessary for this purpose as for the purpose of economical purchase and getting rid of monopoly privileges held by each nationality. In matters of engineering practice, distribution of rolling stock, general accounting, practice audits, etc., the system aspect of the various lines becomes fully as important as the individual aspect. The highest technical skill will be required to devise and apply standards and to secure the co-ordination of all the parts of the big machine. Some of this skill is present in China, but even the most ardent of self-admiring Chinese admit that there is very little experience on the part of Chinese in these larger aspects of the organization. Hence they propose that the Ministry of Communications hire a group of technical experts to cover the field of construction and maintenance, design and repair of rolling stock, traffic, accounts, and purchase. The foreign point of view is that experts should not be advisers, but should be made responsible for these departments, subject to the control of the Ministry of Communications. They point out that Japan, when confronted with a similar situation, actually put the foreigner in charge of a specific piece of work, and held him responsible not only for its proper performance but also for training up a force of assistants who must be able within a term of years actually to take over full control; and that as a result Japan was able to dispense with all foreign assistance within a generation. It would be incorrect to infer that this view is not shared by Chinese, but very few have dared to speak of it in very positive terms.

A technical board such as this must have a chairman. There is as much need for such a co-ordinating individual on such a board as there is need on the lines for a General Manager in addition to the Maintenance Engineer, Locomotive Superintendent, Traffic Manager and Chief Accountant. Such a chairman must be a railroad man of broad view. He would be the connecting link between the board of experts and the Minister of Communications as well as between the railway administration and the foreign bondholding interest.

There has been considerable talk as if the proposal were to put the present Government lines under foreign control. The real intention appears to have been to provide the means of putting them under more complete Chinese control. The separation of Chinese and foreign personel by lines instead of by grades and the employment of whatever foreign technical ability is required for the systemization of the various lines upon uniform standards, heads up with the Ministry of Communications as the final source of power. No Chinese will honestly maintain for a moment, however, that at the present stage of official attitude, any Minister of Communications, if left entirely to his own devices, would abide by the civil service rules, which must be promulgated as a part of the plan, or that he would refrain from giving concerns in which he or his friends are interested preferential rates and service. Although there has been prescribed a uniform classification of accounts, every Chief Accountant upon Chinese railways

has received orders from time to time from the Minister of Communications to act contrary to that classification. We all know what is happening as to rates, and how wagons are being distributed to favored firms. These things are more important to the Chinese shipper than they are to the foreign investor, but no foreign investor will give up his privileges on a line like the Chengting-Taiyuan or the Shanghai-Nanking unless he has some way of preventing practices like the above from becoming general. At present each line's bondholders are represented in China by some banking firm which acts as trustee, and whose agent resides in Peking or thereabouts for the purpose of protecting his clients from just that sort of thing. Now, if the lines which these agents represent are to be merged into a general system using similar equipment, having common standards and the same rules, it is but natural that these men shall be associated so as to act as a unit whenever the rules which have been agreed upon are not observed.

In addition, they will have a large work to do in composing their own mutual differences along national lines. One of the first things which they would have to decide upon would be how to arrange for the building of the various lines—which by Japanese, which by British and which by Americans. The obvious answer is, that after a route has been decided upon by the Chinese government under advice of the expert construction engineer mentioned above, actual construction should be let to the lowest bidder. But how about operation after construction? It will be necessary as in the past to bring in some foreign help for that purpose who will be permanent for a few years at least. What nationality? Manifestly there will have to be some distribution of positions to forestall actual discrimination.

Suppose for example, that an American is made general manager of a given line; he will need as immediate subordinates men who speak English. Naturally he will prefer Americans and Englishmen. A Japanese general manager will be sure to choose Japanese. It would be a miracle indeed if these appointments sometime or other did not give rise to differences. Then, too, with a rather definite national caste to the management of a given line, it would be surprising if charges were not raised from time to time that merchants of that nationality were being favored at the expense of merchants of other nationalities. In construction matters, there are two ways of making a profit, doing the work so efficiently that a low bid still leaves a margin, or skimping the specifications so as to get the profit. It will be a marvel if unsuccessful bidders do not from time to time raise the charge that the successful bidders are making their bids lower than standard construction will warrant, and then "fixing" the inspectors so that poor work is accepted. National jealousy will have its finest opportunity at this point,—and no doubt there will be abundant justification for it unless the means are devised for preventing it. It is apparent, therefore, that the foreign financial representatives will have to be in almost constant session at Peking in order to settle such disputes as they can and to hold the Chinese administration up to its engagements. These men will need a very good knowledge of general railway affairs if they are going to be able to protect their own nationals against possible discrimination and contribute anything constructive to the general program. They will need to receive very comprehensive reports of the workings of the lines in which they are interested, and have the means of investigating the accuracy of the reports received.

It is said currently that except for a few who have expected to have unlimited foreign capital to handle in their own peculiar way, the Chinese favor this general plan for new lines and those now under some degree of foreign control, but not on lines which are under purely Chinese control. On the other hand, the Japanese are not averse to the idea, so long as it is not applied to the South Manchuria and Shantung railways. The French advocate it, so long as it is not applied to the Yunnan railway, and the British complete the list by insisting that the Shanghai-Nanking and the Taokow-Chinghua lines also be omitted. It is obvious that on that basis there is no likelihood of getting anything like a system out of the Chinese railways. Whoever heard of adopting common standards for the branch lines, while on the main lines all the rainbow varieties are continued? Just suppose that some railway man should propose that all the branch lines be made of uniform gauge while on the main lines three or four different gauges exist. Would he not be committed to a sanity commission? Yet that is what these reservations amount to. Peking-Mukden cars cannot be used in numbers over the Peking-Suiyuan line for the reason that they are not equipped with air brakes. Shanghai-Hangchow-Ningpo cars cannot be used in numbers on its only connection, the Shanghai-Nanking for the same reason. Peking-Mukden cars cannot be used on the South Manchuria line because the drawbar is several inches higher. If there is to be a Chinese system, it must be a system. Exceptions do not make it. These reserve lines are the heart of the whole plan.

The Japanese claim that their position on the South Manchuria railway is not to be compared with that of the British on the Shanghai-Nanking. Perhaps not. Possession of a watch by means of highway robbery should not be compared with possession by means of rental. But evidently that is not quite what the Japanese mean. At any rate the British have a contract on the Shanghai-Nanking which has thirty-two years yet to run. The Japanese have a contract on the South Manchuria railway which, if the original agreement prevails, may be taken up at the end of fourteen years. (Of course, no one expects that Japan will secure from anyone a recognition of the extension of this term extorted under the Twenty-one Demands). The point is, that if the plan is to be tried, it must be tried in such a way as to create confidence in the good faith of all parties. Otherwise, the old sphere of influence will stand. That situation gives no promise of any rapid development in China, without which the industry and commerce of Japan are doomed to a very hard time.

Unless some plan of this sort is worked out, it is very doubtful if foreign capital other than Japanese will be anxious for Chinese investment. At the same time there is a very definite impression abroad that Japan will not be allowed to send over her army to collect bad debts. Japan herself will, therefore, look well to her security. One can't get blood from a turnip. Chinese investments must be made productive. The success or failure of the proposal, therefore, will depend largely upon the Chinese answer to the following questions:

Do you want more railways?

Do you believe that the civil service principle should be applied to employment upon Chinese railways?

Do you want sound methods of organization to be applied to Chinese railways?

Do you want the railways in China to be welded into an efficient national *system*?

Do you want Chinese sovereignty to be confirmed over Manchuria and Shantung?

The opposition of Chinese, such as Mr. Tsao Ju-lin and Mr. Liang Shih-yi, to the scheme of nationalization as propounded by certain foreigners is based on the ground that the aim is to secure full control of the railways. This plan would in the opinion of the opponents mean confiscation, and as a counter measure they propose that all non-Government railways such as the South Manchuria Railway, the Chinese Eastern (the section of the trans-Siberian line traversing Chinese soil), the Tonkin-Yunnan, and the Kaiochow-Tsinanfu, should be nationalized, but that existing Government lines should remain as they are, their improvement and reorganization being China's own business. Already, it is claimed, plans for standardization are under consideration by the Government, and in this connexion no foreign intervention is needed. If the spheres of influence are to be abolished, say the opponents, then an appeal could be made to the League of Nations to secure for China liberty of action in the future arrangement of loans and extension of railways. At the same time, the Chinese themselves should organize a financial group, in which foreigners may be allowed to participate, to undertake the arrangement of future loans. In this connexion it is interesting to note that the Chinese lost no time in acting. Mr. Liang Shih-yi called a meeting about the middle of March at which were present Messrs Tsao Ju-lin, present Minister of Communications and President of the Bank of Communications; Lu Chung-yu, Manager of the Exchange Bank of China; Feng Keng-kwang and Chang Chia-ao, Governor and Vice-Governor respectively of the Bank of China; Lin Chang-min, Wang Chung-hwei and others, when it was decided to form a Company with a capital of $10,000,000, half of which was promised by some of those present. Mr. Tsao Ju-lin promised that the Bank

of Communications would subscribe $3,000,000, Mr. Lu Chung-yu said the Exchange Bank would take $1,500,000, the Ching Chen bank promised $200,000, and the Hsing Hua Savings Bank $150,000, while the Governor of the Bank of China said he would place the matter before his Directors. Mr. Liang explained that in reality only a small capital was needed "to defray the expenses to be incurred in surveying the railway lines."

This combination has been promised the support of the President so it need not be surprising if it eventually develops into a construction company, undertaking the building of railways on a percentage on cost basis.

The Chinese Diplomatic Council originally favored unification and internationalization but eventually they modified their views, for early in March they held a meeting and passed the following resolutions:—

1.—Political railroads such as the South Manchurian, Chinese Eastern Railway, Yunnan-Annam, Tsinan-Kiaochao, Kirin-Changchun, and Moukden-Antung, are to be redeemed by the Chinese Government with funds to be loaned from a foreign financial group in future.

2.—Those railways which have been built with foreign funds, such as the Peking-Moukden, Tientsin-Pukow, Shanghai-Nanking will be permitted to remain as they are.

3.—Those railways in course of construction or to be built by foreign funds such as the Canton-Hankow railway will be built with funds from a financial group to be formed by Chinese capitalists who will invite foreign capitalists to participate.

4.—The powers of administration and transportation are to be vested entirely in the Ministry of Communications, though foreign bondholders may nominate accountants or auditors to look after their interests in the railways.

The opposition of the leading Chinese may mean that the scheme will fall through, though the discussion that ensued will undoubtedly lead to some improvement in railway management and extension.

The Prospects of Shanghai as a Manufacturing Centre

The last few years have seen a considerable development of Shanghai as an actual manufacturing centre and it is of the highest interest and importance to form a sound idea as to what this signifies and how far the process may be extended. A perusal of the Customs annual reports, under the caption of "Principal Articles Exported (not including re-exports)", gives a fairly comprehensive notion as to the nature of the products and the rate of development. Piece goods to the extent of considerably over two million pieces per annum, and flour to an amount of some three million piculs per annum, are the most noticeable items but there are many others of consequence such as bamboo brooms, cigarettes, egg products, medicines, oil, boots and shoes, silk and skins. From 1912 to 1916 some of these items increased from fifty to two hundred per cent. The Customs returns moreover do not convey any idea as to the local consumption of local products, which certainly form a not inconsiderable addition to the amounts.

Except in the matter of processes auxiliary in one way or another to shipping interests, Shanghai would not appear to be very well suited for manufacture. The conditions to a certain extent resemble those in London, which has never achieved any great fame as an industrial centre except for a few special commodities. In one sense, therefore, this development in Shanghai is rather remarkable and worthy of investigation.

It is an axiom in manufacture that the greatest economy is effected by placing the factory at a point nearest to the sources of supply of raw material and fuel so that the freight on these necessarily bulky and heavy goods will be as little as possible. When it happens that the raw material and fuel come from different localities, the best site for the factory will be determined, other things being the same, by a compromise between the transport of raw material and fuel, generally favouring the latter. In Shanghai, however, we find the fuel carried from considerable distances. Without possessing intimate knowledge of the processes of, say, cotton or silk manufacture, it is difficult to say whether the arrangement is really an economical one or not, when compared with other possible sites for factories in China. Obviously it pays at present although we believe the war prices of coal have hit some of the mills rather heavily.

The real point at issue is whether Shanghai is so located with respect to fuel supplies that it can maintain a predominance over other Chinese cities, and we must confess to some doubt on the subject. At the present stage in Shanghai's development it offers advantages of a peculiar kind to manufacturers, which probably override to some extent the difficulties of fuel supply. The protection from interference and official squeeze, the shipping facilities, plentiful labor supply and the commercial organization for concentration and distribution of goods, all have large commercial values which enter into the situation. If it should, however, happen, as we all hope, that China really becomes stabilized, and her communications and mercantile system become greatly improved, there appears a strong possibility that many of the industries which now flourish in Shanghai may find more remunerative fields nearer to the real source of all modern productive ability—the coalfields. Shanghai as a whole will not necessarily suffer by this since it would seem that it can only occur concurrently with such a general improvement in Chinese conditions as will enormously increase Shanghai's mainstay, the shipping business, but it will make things rather different.

At the risk of being tedious, we cannot too strongly emphasize the importance of the coal question to Shanghai. At the present time the local consumption is in the neighborhood of one-and-a-half million tons per annum, of which probably one half or more is used simply for heating purposes. Assuming it is only one half which is so used the remainder, if converted to power under moderately good conditions, would continuously supply over 25,000 brake horse-power. The Municipal Electricity Department, according to the last report, consumes over one hundred thousand tons of coal per annum and sells something like 8,000 horse-power continuously for power and heating. It is quite obvious that a difference of one dollar per ton in the cost of coal makes a very heavy charge on the industrial interests of Shanghai and yet the town is so placed that such differences are very likely to occur. Shanghai being almost equidistant, from the point of view of cost of transport, from the three main sources, Central China, North China and Japan, the value there of what is in some ways the most important commodity in the world is liable to undergo constant fluctuations and the industries of Shanghai are practically at the mercy of the coal transporters. This is, of course, very ancient history but is none the less true for all that.

The Chefoo-Weihsien Railway Project

The residents of Chefoo, both Chinese and foreign, are making another determined bid for the consummation of their long deferred hopes for railway connexion with the interior of the province. An agitation is now well afoot. The Chinese Chamber of Commerce at Chefoo has despatched a telegram to the Chinese delegates at the Paris Peace Conference urging the latter to have the matter placed before the Peace Conference; not purely as a railway question but as a general demand for the abrogation of the Twenty-one Demands, and the establishment in Shantung province at least of the broad principles laid down in the Open Door policy. The Chinese Chamber of Commerce claim that under existing conditions the door is not open, this contention being supported of course by the existence of the clause in the Treaty of 1915 which concedes to Japan the rights held by the Germans under the Kiaochow Convention. It is generally believed that Japan, if she is able to sustain her title to the heritage, will use her strongest influence to prevent a railway being built to a port which, if properly developed, might prove a possible rival to Tsingtao. This might not be so, but the Chefoo residents appear to be taking no chances. They have been agitating for many years for a railway, and though numerous schemes have been dangled before their eyes none has so far managed to materialise. In order that the Chinese Government shall realise that at last the people are in earnest they have sent a copy of the telegram designed for the Peace Delegates to the officials at Peking hoping that they will be moved to action or acquiescence by a definite patriotic appeal. The Japanese Government has, in a general way, allowed it to be understood that it will in no way trespass upon the rights of the Chinese nor interfere with the sovereignty

of the State, and if such intimations are worth anything at all they surely mean that Japan will take no steps to interfere with the legitimate aspirations of the Chefoo people. Chefoo, as the only Chinese port in Shantung of any consequence or promise, has decided claims to consideration. It is certainly entitled to railway connexion with the interior, not only because of the port but because of the service such a railway would render the territory through which it would pass. All that is needed is the acquiescence of the Central Government to the project, the absence of opposition on the part of Japan, and—the capital. If the two former considerations are disposed of the capital will no doubt be forthcoming. The Chinese people in the region affected will gladly invest their quota, and if the Government does not see fit to push the project through as one of a national character then there are many Chinese with interests of one kind or another in Shantung who will gladly enough subscribe the requisite capital for construction. So it is distinctly up to the Government to show its hand, and, since the Chefoo people do not want Japanese money, to Japan to demonstrate her friendship.

Aerial Transport in The Far East

The fact that the Chinese Government has established an Aviation Department, and has ordered at least half a dozen Handley-Page aeroplanes to begin with indicates that the Far East will soon see aircraft being used for practical purposes, and it seems perfectly natural that this should happen. Whether developments will necessarily proceed just as the promoters hope is another matter but something certainly will happen. The end of the Great War finds the world in possession of many thousands of aeroplanes of proved ability and, what is much more valuable, almost an army of men who can fly under very difficult conditions. Commercial flight, while it will have its difficulties and dangers, will be a simple business compared with military aviation and the mere fact that the latter has been such a prodigious success is proof positive that the former is an immediate possibility.

There are, however, very distinct economic limits which make it highly improbable that aerial transport will be used for anything but first class transport, i.e., letter mail, urgent personal transport and the carriage of light but valuable cargo. The principal part of the expense is in the running, and a very simple idea of the large energy required may be obtained from the consideration that the engine has continuously to pull itself, the machine and load up an imaginary grade of between ten and fifteen per cent. (1 in. 10 to 1 in. 6). When actually ascending a further reserve of power is required. There is a limit to the size of aeroplanes determined by the fact that the weight of the structure increases more rapidly than the supporting area, but the success of the large Handley-Page machines shows that this limit is a matter of some tons.

China is in some ways peculiarly suited to aeroplane transport. Aerodromes can be established without great difficulty and the notorious lack of roads will only affect the question of ground supplies. The western part of China being wholly mountainous is not quite so satisfactory but with numerous well arranged landing places the conditions are probably not prohibitive.

Some difficulty might occur from the superstitions of the peasants in the remoter parts of the country, but it would probably not be long before they would regard the machines as simply another example of the foreign "Yao Kuai" which really wasn't of any importance after all.

One very important question, especially to the owners of the machines, would be the question of Chinese pilots. We believe that the Chinese aviators who were trained to fly the Caudron machines in Peking proved fairly successful and the sangfroid shewn by the average chauffeur proves that as far as coolness goes there is no reason why Chinese pilots should not do well. On the other hand even with the most stable machines considerable initiative is required to meet unusual conditions, especially of course in rising and landing, and it would be necessary to put every pilot through an elaborate course of mental and physical tests such as is used in all military schools of aviation before expensive machines could be entrusted to them.

Without wishing to appear at all pessimistic, we also venture to prophesy that all kinds of foolish obstruction will arise from parochially-minded but sincere officials. This is especially likely to be the case if the pilots are foreigners, as they must necessarily be for some time especially for passenger carrying planes.

Some of the benefits that a good system of aerial transport could confer are enormous. Places which now require months to visit could be almost regarded as week-end trips. Routes which can only be traversed by hardened travellers would be eliminated. Mail, which now takes weeks, could be delivered within a day or so and from a political point of view contact could be obtained with outlying regions with almost as much ease as is now the case with, say, Soochow from Shanghai.

Profits from Exchange

How exchange has favored industrial companies operating with gold capital upon a profitable basis in China during recent years is strikingly illustrated in the case of the Chinese Engineering and Mining Company, Ltd., which is combined with the Lanchow Mining Company, under the Kailan Mining Administration. The rate of exchange at which the Engineering and Mining Co.'s share of the profits of the Kailan Mining Administration for the year ended June 30, 1916, figured in the profit and loss account was 1s. 11 1/16d. per silver dollar. The rate at June 30, 1917, was higher, being 2s. 5½d. per silver dollar, while the rate for the year ended June 30, 1918, was 3s. 2⅛d. per silver dollar. These figures are significant, and the actual effect they had upon the sterling returns of the Company can be appreciated when it is remarked that the Company's share of the profits of the Kailan Mining Administration for the year ended June, 1918, which totalled $3,299,397, silver currency, produced about £120,000 more in sterling than it would have done at the rate which figured in the accounts of the preceding year. This is a situation in which money is earned without effort by organizations on gold capitalization, but conversely the business established in a silver country which derives its income from countries enjoying the stability afforded by a gold standard suffers seriously while silver soars as it has been doing during the past few years. No-one wants to see enterprises robbed of unearned increment but the introduction of a gold standard in China would in the end be better for everyone engaged in business, and would no doubt be welcomed by all except exchange speculators.

Self-Luminous Paints in War and Peace

Self-luminous paints were largely used during the war for the dials of watches and instruments, for trench signs, for buoys, and many other purposes. Very little was known of the best composition of such paints and the best way of using them until Professor Clinton of University College, London, and Mr. J. H. Dow of the Illuminating Engineering Society of Great Britain carried out tests with special forms of electric glow-lamp photometer. They used paints made of radium bromide and zinc sulphide, which at first show a quick rise in the light given off, followed by a slow decay. They found that if more than a certain minute proportion of radium was used, the light fell away so rapidly that no advantage was gained. They also found that the same thing happened if the paint was laid on too thickly. Owing to the high cost of radium these results enabled big savings to be effected in the expenditure on self-luminous paints during the war. They will be no less valuable in peace, when the use of these paints is developed for the illumination of instrument dials, electric switches, signs and signposts, buoys, and other things where it is desirable to provide permanent visibility.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Chefoo-Weihsien Railway Project. — The Chinese Chamber of Commerce at Chefoo recently sent the following telegram to the Peace Plenipotentiaries for China in Paris:

"As the realization of a Chefoo Railway in Shantung Province is commercially and politically a vital and important factor, affecting alike the Sovereign Rights of China and the proper interests of those having trade relations with China, your consideration is respectfully solicited for the presentation of the question at the Peace Conference. For many years, particularly since 1908, there has been continuous commercial agitation for the Chefoo Railway, but owing to the conditions imposed by Germany on China under the Kiaochow Conventions (conditions now claimed by Japan as successor) with regard to Finance and Railway construction in Shantung, our Government, while repeatedly expressing genuine appreciation of the merits of such an enterprise, have been restrained from either building the Railway or granting permission for construction as a purely private commercial undertaking. It is mandatory that China's freedom of action in the development of Shantung should be guaranteed. Under such a regime, not only would the Open Port of Chefoo be saved from commercial extinction, but the Sovereign Rights of China would be better assured."

Shanghai Tramways.—The effective receipts of the Shanghai Tramways in February amounted to Mex $105,677.97 as against $103,457.95 in February of last year, with 6,248,940 passengers carried in February 1919 as against 5,911,549 in February, 1918. Recent weekly figures were as follows:

Week Ending:	Effective Receipts:	Passengers Carried:
March 5th	$26,330.18	1,588,498
March 12th	28,743.41	1,748,595
March 19th	28,591.70	1,734,488
March 26th	27,549.77	1,666,778

Congestion of Cargoes on S.M.R. Lines.—According to an investigation made on February 18th, the congestion of cargoes at the S. M. R. Co. Manchuria Line points north of Liaoyang is 629,051 tons, of which 612,866 tons are southbound and 16,185 tons are northbound. At points south of Liaoyang there are about 100,000 tons of cargo awaiting transportation, most of which are at Yingkou. About 260 cars are now being supplied daily for north of Moukden. The cargo at the northern points is as under:—

(not including coal)

Fushun	30,450 tons
Hsintaitzu	16,500 ,,
Kouchiatien	10,801 ,,
Tiehling	19,216 ,,
Kungchuling ...	64,780 ,,
Kaiyuan	93,107 ,,
Fanchiatun	39,150 ,,
Changchun	259,300 ,,

Proposed Canton-Macao Railway. — The Canton-Macao Railway Company has been provisionally registered. A meeting of stockholders is to follow soon.

Japanese Railways Building Locomotives.—Twelve locomotives, bigger than any yet in use in Japan, will shortly be built by the Imperial Railways in the Hamamatsu shops. The Imperial Railway Board is also preparing to turn out a number of 12-ton cars from its own shops, as private car builders have fallen behind in their deliveries of cars by 1,000 out of an order for 2,500 cars.

Subway for Tokyo.—A group of Toyko businessmen have applied for permission to construct a subway in Tokyo with a capital of Y.200,000,000. The elevated lines in Tokyo are being extended as well. These measures are required by the congestion of the street railway system.

MINING

New Manchurian Colliery.—The Shihpeiling Colliery, near Changchun, with a daily output of 150 to 200 tons, is being put ready for operation by the South Manchuria Mining Co.

Kailan Mining Administration. — Recent weekly records of production and sales of the Administration's mines have been as follows:

Week Ending:	Output: tons	Sales: tons
March 1st	68,527	63,442
March 8th	66,532	68,266
March 15th	74,425	60,089

Seoul Mining Company.—During February the Tulmichung mill worked 11,800 tons of ore, yielding a gross recovery of Yen 146,918.44. Due to the severity of the weather and the shortage of fuel supply, the Suan mill was temporarily closed during February, but was restarted from March 1st.

Japanese Mineral Outputs.—A Japanese Government estimate puts the output of leading minerals in 1918 as follows: Gold 1,961,203 *momme;* silver 49,526,314 *momme;* copper 135,056,620 *kin;* iron 81,558 tons; coal 23,741,294 tons; petroleum 2,084,582 *koku;* sulphur 60,004 tons. Gold, iron and coal show slight increases; the other items show decreases. The *momme* is the equivalent of 0.13228 ounce avoirdupois; the *kin* is the equivalent of 160 *momme* or 1.32277-lb. avoirdupois; and the *koku* is the equivalent of 4.96005 Imp. bushels.

Japanese Mining Concessions.—The applications for new mining concessions filed with the Japanese Government in 1918 totalled 29,388. Of these 16,708 were for metal and 10,006 for coal mines.

Rich Coal Discoveries in Manchuria.—It is reported that the coal discovered in Sinchiu is far superior in quality to that of the mines at Fushun and Pengchi. A joint company of Japanese and Chinese, named the San Hsin Company, is reported to have been organized with a capital of Yen 3,000,000 for the working of the mines.

Hokkaido Colliery Dividend.—The Hokkaido Colliery and Steamship Company proposes to pay, on its workings in the last term, a dividend of 18 per cent. on both preference and ordinary shares, which will account for some Yen 1,300,000 of a total profit of Yen 4,189,377.

INDUSTRIES

Flour Mill in Chinese Interior.—The Tien Feng Flour Mill, with a capacity of 60,000 pounds daily, was put into operation at Kaifeng, in Honan Province, in March. The machinery, which is of the latest American pattern and which was supplied by a Shanghai firm, cost over $50,000.

New Cotton Mill at Tsingtao.—A new and up-to-date cotton spinning mill of 15,000 spindles will be built for the Wa Shing Cotton Spinning and Weaving Co. of Tsingtao. Gaston, Williams & Wigmore will supply the machinery, which will be of American make.

Modern Laundry for Shanghai.—A company is being floated in Shanghai for the purpose of operating a modern steam laundry with the most up to date machinery. Half the capital of Tls. 250,000 has been subscribed by the directors, and the remainder is offered to the public in shares of Tls. 10.

Tsingtao A Beef Centre.—The exportation of beef from Tsingtao is steadily increasing. From 1,894 tons in 1915 the export grew to 8,837 tons in 1918, distributed as follows: Manila, 3,704 tons; Japan, 2,660 tons; Vladivostok, 1,401 tons; Shanghai and Dairen, 200 tons; others, 872 tons. The Quartermaster Department at Manila is a heavy purchaser.

New Osaka Textile Works.—A new textile factory with a capital of Yen 500,000 is being established at Osaka for the manufacture of calico or shirting.

Big Profit for Spinning Company.—The Kanegafuchi Spinning Company made a profit on its operations in the past half-year amounting to considerably more than half its paid-up capital, and has paid a dividend of 70 per cent. per annum in addition to placing handsome sums to various accounts for the benefit of employes.

Syndicate for Nitrate Fixation.—It is reported that the Mitsui, Mitsubishi, Sumitomo and Kankyo groups have secured from the

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THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

上海仁記路第五號

遠東時報

Chinese Railways in 1918

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The Soldier Curse in China

Some Reflections upon Present Day Conditions with some Practical Suggestions for Reform

Chinese Education:

Its Result on the Individual and Community

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Recent Chinese Agreements

Vol. XV. MAY, 1919 No. 5

SHANGHAI, PEKING, TOKYO AND MANILA

The system of enlistment, drill, musketry practice, etc., should be made uniform throughout the army and some attempt should be made to standardize arms and ammunition, so that economy and greater efficiency would be achieved, and particularly so that officers and men in the army could acquire some little sense of responsibility and some little self-respect.

Some such set of regulations as the above if enforced would make China a much more comfortable place for the Chinese people to inhabit, would increase the value of foreign investments and would soon make China an inviting field for both native and foreign enterprise. The items which are given above are not complete but are simply suggestions for correcting evils which the writer, in travelling over the length and breadth of China, has found flourishing at one time or another in nearly every part of the country. A council of experts could undoubtedly draw up a much more complete set of regulations, but whatever the criticism of that which is written, it must be confessed that the evils indicated exist nearly everywhere in China and are crying out for correction.

Now that both the North and the South are represented in Shanghai the foreign Powers have an exceptional opportunity to come down heavily upon the gathering there, present some such set of rules as the above, together with a scheme for the imminent disbanding of superfluous troops, and insist that they be adopted and registered with the nations now represented in Paris as a guarantee of fulfillment. Nothing would be more distasteful to the politicians and military leaders who are now potentially China, but on this score China deserves absolutely no more sympathy or consideration until she has shown some disposition to earn them.

One of the most reasonable schemes for the immediate disbanding of a great proportion of the men now under arms, is the one to which we have already referred, drawn up by a well-known foreigner whose knowledge of Chinese political matters and whose influence among officials of many factions in both the North and the South are unrivalled. The following is this authority's own summary of his scheme:—

1.—That China be divided into five military departments as follows:—

(*a*) Department of the Northeast.

(*b*) Department of the Northwest.

(*c*) Department of the Centre.

(*d*) Department of the Southwest.

(*e*) Department of the Southeast.

2.—That the President appoint by Mandate one commander, and one deputy commander over each Department.

3.—That the five Department commanders acting under the direction of the Minister of War compose the Disbandment Commission.

4.—That the Consortium appoint representatives of the banking groups participating in the reorganization loan as members of the Financial Commission for the Disbandment of Troops.

5.—That the Disbandment Commission and the Financial Commission for the Disbandment of Troops each appoint two representatives, who shall under the direction of the Minister of Communications form the Public Works Commission for the employment of disbanded troops.

6.—That the Chinese army be reduced to a peace basis of 250,000 men, or 25 divisions of 10,000 men each.

7.—That every soldier disbanded shall possess one rifle and one hundred rounds of ammunition, and that only those soldiers possessing such equipment shall be considered as part of the Chinese army to be disbanded.

8.—That the Disbandment Commission shall turn over to the Financial Commission for the Disbandment of Troops every soldier disbanded together with his rifle and 100 rounds of ammunition.

9.—That the Financial Commission for the Disbandment of Troops shall act as custodians for all arms so received from disbanded soldiers, and shall turn the disbanded soldier over to the Public Works Commission for the employment of disbanded troops, and each soldier so passed to the employment commission shall be given employment upon the following basis:

(*a*) Wages amounting to $8.00 per month.

(*b*) Food and clothing.

(*c*) Lodging.

(*d*) Term of employment to be five years.

10.—That the Public Works Commission shall undertake the construction of public roads and conservancy of waterways only.

11.—That, after the national army has been reduced to 250,000 men, the Disbandment Commission and the Financial Commission for the Disbandment of Troops shall be abolished, and that all of their work shall be undertaken by the Public Works Commission for the employment of disbanded troops.

12.—That half of the national army be stationed on the frontiers of China, and that the other half be divided into brigades of 5,000 men each, and one brigade stationed in each provincial capital.

Iron Manufacture in Shanghai

The idea has recently been mooted that blast furnaces and steel-works could be profitably built in Shanghai. So long as the present instability of the Government persists the idea may seem attractive, but there are certainly some serious difficulties. Assuming a low grade ore (say forty per cent. of iron) to produce one ton of pig iron it requires two-and-a-half tons of ore, one ton of coke or anthracite and half-a-ton of limestone, making a grand total of some four-and-a-half tons. If good cast iron or steel is required, upwards of half-a-ton more fuel is required. Supposing high grade ores (say seventy per cent.) are available, one ton less ore per ton of iron is required. Hence it follows that from four to five tons of raw material are required to produce one ton of cast iron or steel. The raw materials exist in various localities off the Yangtze valley from above Hankow down to Chinkiang, but speaking very roughly it seems probably that the most economical site (the point at which the total cost of transporting the raw materials is a minimum) would not be less than 200 miles from Shanghai. Even at railway or steamer rates of say one cent per ton mile and disregarding the cost of transhipments it seems certain that iron-works in Shanghai would be burdened with an economically unnecessary expense of at the very least ten dollars per ton of iron, due to freight on raw materials.

The question then is whether the advantages of security, markets, etc., in Shanghai outweigh the extra freight on raw materials. In any ordinary country, they certainly would not do

The Late Jeme Tien-yu

Mr. Jeme Tien-yu, who died at Hankow on April 24, was one of China's most prominent engineers and students of modern progress. His most important work was the construction of the Peking-Kalgan Railway, of which he was chief engineer. More recently he has been President of the Kwangtung division of the Canton-Hankow Railway and assistant director of the same line, an appointment which he received in 1911-12, and since 1914 the director-general of the Canton-Hankow-Szechuan line. He was born in Canton in 1861 and was educated at the Chinese Educational Mission School of Shanghai. He subsequently went to the United States and studied civil engineering in Yale University, gaining his Ph. B. degree. It was at Yale where his fellow students dubbed him "Jimmie" from the Pekingese pronounciation of his family name, Chan; and thereafter Mr. Chan Tien-yu became Jeme Tien-yu.

On his return to China he completed his course in the Naval School connected with the Foochow Arsenal and, after a course of teaching in Foochow Arsenal School and the Whampoa Government School, he took up various engineering appointments on different railways.

Chinese Railways in 1918

The Preliminary Report of the Ministry of Communications with Notes on the Year's Railway History and Official Report for 1917

The Ministry of Communications is to be commended for the progressive attitude manifested by the publishing of the 1918 statistics of earnings, an account of which is given at the end of this article.

It will be noted that a new line is included in the 1918 list—the Hupeh-Hunan. This is the northern section of the Canton-Hankow line, which was completed to Changsha during 1917. It is still in the hands of the construction forces, and its earnings will be applied to construction purposes. If this line be eliminated, the total revenues from the combined lines amount to $75,216 697. This is approximately $11,666,000 above the earnings for 1917—an increase of 18 per cent. So large an increase under the conditions which have obtained during the past year deserves closer consideration.

In the first place weather conditions were very favorable. Attention will be called to the drought followed by floods in 1917. This depressed earnings in 1917, thus favoring the comparison. To a certain extent, traffic which could not move in 1917 waited until 1918, which actually swelled the volume of 1918 traffic beyond its normal proportions. But 1918 was remarkably free from interruptions due to high water. Rains began early and continued late. But they were of short duration, permitting the surface waters to be absorbed in part and giving time for drainage before another rain followed. This was particularly fortunate, for on the Peking-Hankow repairs to the line had proceeded only partially in restoring the condition prior to 1917 when the rainy season began. At many points temporary track upon low diversion roadbed was still in use, and three days of continuous heavy rain would have washed these away. Luckily none of them suffered and the only water trouble was at entirely new points. One of the most remarkable of these new points of attack was on the Taokow-Chinghua line. This line seems to be located entirely away from water courses. It runs in the same direction as the drainage basins rather than across them. But during the summer it had a serious washout, thus giving another evidence of the whimsicality of Chinese rivers and the impossibility of predicting where they will break out next.

Not only did the manner of rainfall favor continuous traffic but it directly contributed to the volumne thereof. Because of the early rains, the first crop was one of the largest of recent years, and the second crop was a repetition of the first. It was gathered with a minimum of damage and was of first-class quality. For a short time the size of the crop threatened to demoralize the market. A very considerable movement of grains occurred in 1917 due to the loss of all foodstuffs in the flooded regions. This ceased entirely. But after a few weeks of hesitation prices became stabilized and a brisk movement began toward normal consumption centres.

Comparison between the 1918 approximate returns and the 1917 actual figures, brings out some important fluctuations upon individual lines. The Peking-Hankow, Peking-Mukden, Tientsin-Pukow, Shanghai-Nanking, Shanghai-Hangchow-Ningpo, Peking-Suiyuan, and Chengting-Taiyuan lines had increases in revenue varying from ten to twenty-five per cent. The Kirin-Changchun, now under complete Japanese management, shows an increase of nearly seventy-five per cent. The increase upon the Chengting-Taiyuan, fully twenty-five per cent., is very interesting when contrasted with the decrease upon the Taokow-Chinghua and the Kaifeng-Honan. Both of the latter lines are also connections of the Peking-Hankow. The principal class of traffic from the Chengting-Taiyuan to the Peking-Hankow is coal, largely from the Ching Hsing mines. Similarly the principal class of traffic from the Taokow-Chinghua is also coal. While the latter line was interrupted for a period because of the washout mentioned above, the principal disability of that line was the inability of the Peking-Hankow to furnish cars to haul away the traffic delivered to it. The Chengting-Taiyuan apparently was not so badly handicapped. The Kaifeng-Honan also carries a considerable coal traffic brought to it by the Peking-Hankow. Its decrease in revenue of nearly twenty-five per cent. is a serious matter. The Chengting-Taiyuan has operated under peaceful conditions maintained by the model Governor Yen of Shansi. The Kaifeng-Honan has had constant trouble with bandits and soldiers—if a distinction is to be made. One of its conductors was shot by a soldier on orders from an officer who objected to having a first-class fare collected from a companion. There is a rumor also that soldiers so beat the Chinese Director who attempted to protect his line from abuse, that he fled to Hankow. On April 17 occurred the first train "hold up" in China. It took place upon the extension to this line, the Lung-Hai. Several passengers were killed and more were wounded by the rifle fire which was a preliminary, and several others were taken away captive to be held for ransom.

Bandit activities seriously interfered with the Tientsin-Pukow during the Autumn months. The track was torn up several times during the month of September, the mail train was turned back two or three times, and delayed many times while regular soldiers went ahead and drove off the attacking party. One of the stations was seized and looted by bandits during the earlier part of the year. In the south similar trouble was experienced upon the Canton-Kowloon. During February, a robber band demanded $5,000 from the railway. Failing to receive it, they tore up the track in the vicinity of Cheung Mok Tou. These conditions account in part for the decrease of revenue upon that line.

The decreases upon the Chuchow-Pinghsiang, and the Changchow-Amoy are directly traceable to the domestic war. The earnings upon both of these lines were up to normal during early months, but with the resumption of hostilities during the summer, they fell away to practically nothing. It will be noted that nothing is reported for the Canton-Samshui. This brisk little line with an annual profit of over $400,000 is in the hands of the Southern party. It may be wondered why the Canton-Kowloon is not similarly seized by the Southern party. This line is a liability rather than an asset. It involves a foreign loan for which the Central government is responsible, hence the foreign officials still make reports to Peking.

The Hupeh-Hunan line, which is reported here for the first time, although badly destroyed by the contending forces of the North and the South, was repaired early in the year. Commercial traffic was accepted in a limited way, but the main activities of the line were principally military service. It is probable that the revenue reported is principally credits for military transportation. What the expenses will be when reported is also an interesting conjecture.

The substantial increase reported by the Peking-Suiyuan is a matter of surprise. That line for two years has been on the down grade in respect to earnings. During the early months of 1918 it was seriously handicapped by plague prevention measures.

During the month of January the line was practically shut down. Measures were gradually relaxed, first by the partial resumption of freight, then resumption of passenger service after quarantine, but it was warm weather before all impediments to traffic were removed. The Peking-Hankow was also affected slightly by these precautionary measures.

The vigorous manner in which the railway lines took up the work of fighting the plague is a matter of congratulation. Comparing the prompt manner in which the epidemic was suppressed with the hold which Spanish influenza has obtained in foreign countries, the population of the larger cities of north China owe a large debt of gratitude to the decision and energy as well as self-denial of those responsible for railway policy. The few thousands of revenue lost by that prompt action undoubtedly saved thousands of lives, and perhaps millions of dollars in business to the mercantile community.

The reservation made with respect to revenue in 1917 must also be made in the case of 1918. Notes of the Bank of China and Bank of Communications, Peking issue, were accepted without restriction during the early months of the year. It soon became apparent that this measure was powerless to raise the value of these depreciated notes. The lines were compelled to pay out silver for materials and supplies and for the most part for wages. There was very little silver coming in from freights and fares. It is easy enough to exchange a single ten-dollar Peking note for silver, but no money changer will handle ten million dollars in that way, and a railway deals in millions. By February the Peking-Suiyuan and other lines began to restrict the use of these notes to payment of fares and forty per cent. of freights. By June the restriction was raised to include all freights. The Peking-Mukden on October 1 refused to accept notes for any purpose. This brought about a very delicate situation upon one section of the line. Tuchun Chang Tso-lin, of Fengtien, insisted that notes should be accepted in the territory under his jurisdiction. The Peking-Mukden had an agreement with the Ministry of Communications to the contrary. The result was that the Ministry of Communications was forced to establish money changers at Mukden, Koupangtze and other stations at which the intending passenger could purchase with notes an order for a ticket. This order was honored at the ticket window, and the Ministry of Communications made up the difference to the Peking-Mukden Railway in silver. This subterfuge, of course, satisfies the foreign interest in the Peking-Mukden, but it does not make money for the Ministry of Communications.

Because of the silver stringency brought on by the acceptance of notes, the Peking-Suiyuan, a line which has always operated at a nominal profit, was forced to negotiate a loan to pay for current supplies. This was accomplished during the closing days of the year. The funds were obtained from Japanese sources and the contract contains the provision that if any financing is required for extensions to the Peking-Suiyuan these interests must have the first chance. While the loan is for only Yen 3,000,000 and can be easily paid off, if real money be collected, yet the straits of the Ministry for ready money are made apparent by its consent to admitting a foreign interest upon this line which hitherto has been the Chinese pride, being Chinese built out of Chinese funds and operated with purely Chinese forces with no foreign supervision.

While the large revenues collected during the year do not represent an improvement in the financial situation of the railways —rather the reverse—they do represent a very substantial increase in the service rendered to the community by the railways. This is fully as important as the actual earnings of the lines. There is little doubt that a similar revenue would have been earned had the collections been made entirely in silver. It is a certainty that the patrons of the lines were in receipt of benefits equivalent at least to what they were willing to pay for them, hence we may conclude that China's travellers and shippers have had the benefit of over eleven million dollars' worth of service more than they had in 1917. Besides, lines like the Shanghai-Nanking have not been affected by depreciated notes. This line was a source of anxiety for some time. Due to severe water competition, its earnings were not sufficient to meet fixed charges. But for three years now it has been able to overcome that disadvantage and its mounting revenues year by year prove that good railway service can compete successfully with water carriers to the advantage of the community served. The Tientsin-Pukow is similarly answering the question as to whether a line without a large mineral tonnage can be profitable in China.

These results have been obtained under great handicaps. The unsettled internal order has been referred to. The financial uncertainty evidenced by depreciated currency affects volume of trade upon the railway as well as in other lines of business. But in addition there has been a serious shortage of equipment. Due to war conditions in all manufacturing countries it has been impossible to obtain either goods wagons or locomotives. All of the leading Chinese lines have been unable to carry all the freight offered. Go where you will, large stores of grain, coal and other freight are to be found stacked up at stations protected from the weather by matting or tarpaulins, awaiting shipment. Some of this is inevitable following harvest and during the winter months when coal is in greatest demand. In every country the season of "peak" demand finds a shortage of wagons. That some freight sometimes has to wait for some days is not in itself an indication of any damage to the community. A car supply which handled the "peak" load with ease, would be extravagantly large for the average condition during the year. But in China perishable cargo is waiting for weeks and months. Wagons are so hard to get that shippers are forced to patronize the large transportation companies which seem to have peculair facilities for obtaining wagons when others cannot. These transportation companies are often the private property of high provincial and even national officials. The abuses which are bound to follow are obvious.

Early in the year the Tientsin-Pukow received three hundred wagons of 30 tons capacity each, under the terms of the notorious Hsu Shih Ying contract with a Japanese firm. This contract provides for a rental of $3.50 and $4 per day for these wagons for a term of fifteen years. While there is little doubt that at any other time, cars could be purchased for terms very much below these, at the same time the revenue value of these cars has been far in advance of that figure during the past year. Just now these wagons are "a very present help in time of trouble." The shortage of locomotives and of passenger cars is practically as serious as that of wagons. The present supply would not fall so far short of the necessities if railway officials had unrestricted control of it. But the interference of the military is too well known to require more than mere mention. They demand special trains at all hours, requiring the disarrangement of schedules for regular trains. They fail to keep to the hours which they set, and thus cause great delays to traffic on the line which must wait for their passage. They have run special trains from Mukden to Hankow with horse fodder and firewood which could have been purchased at the latter point, and have run the wagons back empty for more, when shipments were standing at every station along the way ready for movement in the same direction. But worst of all, they hold covered wagons at encampments indefinitely, ostensibly so as to be able to execute prompt movements—retreats of course—but actually as living quarters. As living quarters it would be cheaper for the railways and cheaper for China to quarter these soldiers in the best foreign hotels. These cars have a daily earning capacity of about $14. They contain about 240 square feet of floor space. A much larger room can be rented at the Astor House or the Wagons Lits, with food for one occupant in addition, for $8. When you consider that between ten and twenty per cent. of the covered wagons of the Peking-Hankow and the Tientsin-Pukow are diverted to this use, it is easy to estimate the limitations which the military place upon the earning power of those lines.

In the field of administration several notable departures are to be recorded for the year. The Peking-Hankow Railway is to be singled out for notice on this point. On March 9 that line opened a railway museum near its quarters on Erh Tiao Hutung, Peking. The purpose of this museum is to exhibit every variety of material used by the railway so that dealers by consulting same may be put in a position to better meet the needs of the line with their wares. About the same time, that line installed at practically every station cases showing the principal products of the country round about. Later in the year an agricultural demonstration

train was run, which carried a band to attract an audience. The audience when gathered was taken through the train, shown improved tools of cultivation, samples of improved seeds, pictures of products which could not be carried conveniently, after which they were entertained by trained agriculturists, who lectured to them upon the principles of selection of seeds, deep cultivation, improved breeds of animals, antidotes for insect pests and kindred topics. While the Chinese farmer probably leads the world in the conservation of soil fertility and the rapid rotation of crops, yet he is very backward in the points covered by these lectures. A line like the Peking-Hankow which derives fully a third of its goods revenue from agricultural products has a very immediate interest in promoting this sort of knowledge. The same line has definitely started upon the project of re-forestation. During the Spring an Arbor Day excursion was run to plant trees along the line. This was largely ceremonial to indicate official appreciation of the subject. But later three definite areas were set aside, a professional forester was engaged, and work is now under way to provide in time the timber required by this line from its own lands.

In conference with the Japanese railways in April, arrangements were made for a through C.O.D. parcels service between the larger cities of Japan and five Chinese cities—Peking, Tientsin, Shanghai, Hankow, and Shanhaikwan. Parcels up to 66 pounds may be shipped, charges collect, in either direction. The railways assume full responsibility, attend to payment of customs, and make collections.

For the five years past, the Japanese railways have been doing the work in connection with the settling of accounts between the different lines participating in through passenger traffic. By agreement, it was the turn of the Chinese railways to assume this task, beginning October 1. For five years, similarly, the Peking-Mukden has been the clearing railway making the settlements between the purely Chinese lines participating in domestice through passenger traffic. By agreement it was the turn of the Tientsin-Pukow to take over this work. The occasion was taken by the Ministry of Communications to place all of this work in charge of a bureau entirely independent of any line. This bureau is now known as the Through Traffic Administration and is located in the railway department of the Ministry of Communications. The Director is J. E. Foley who still retains his position as Traffic Manager of the Peking-Mukden Railway which he has held so many years. The immediate accounting work is in charge of J. Lockhart who had charge of this work on the Peking-Mukden. A considerable portion of the original staff connected with this work on that line was transferred to Peking, so that there was very little break in the continuity of the work. In addition, the Through Traffic Administration is charged with the large task of working out ways and means of extending the principle of through traffic to goods service. Questions of likin, interchange of rolling stock exchange, policing and others will make it some time before any very tangible results are to be expected.

During the summer a general traffic conference was held in Peking for a period of three weeks. A great many questions concerned with uniformity of traffic practice were under discussion. The two most important upon which action was taken were the adoption of the metric system upon all lines and a plan for interchange of rolling stock. The so-called French lines now use the metric system, the English lines use the English system of measurements, and the native lines hold to Chinese measurement This, of course, interposes a serious obstacle to uniform practice. Changes of this sort are difficult to make, for it means a replacement of all instruments of measure, such as rules, scales, micrometres, chains, etc., but most of all it means that officers who have grown up under the one system must learn anew all their standards. A large part of an officer's ability consists of the readiness with which he can decide, mentally, whether or no certain performances are acceptable. This always means mental measurement against some standard already fixed in his mind, and fixed in terms of his habitual system of measurement. For a man in middle life to discard all of these standards and restate them in terms of a different unit is a very difficult matter. Hence it is not surprising that the officers of lines using the English system were somewhat reluctant to make the change. Time is required to change the various measures and to restate the dimensions of property in place, hence it is pleasant to record that this period of preparation was fixed at only three years.

With respect to interchange of rolling stock the Ministry proposed as a basis of discussion that all of the goods wagons of the standard gauge lines now participating in through traffic arrangements should be "pooled." In other words, it was proposed that wagons under load should go through to destination without transfer of load at junction point, and that when on the rails of a line not owning them they were to be treated as the property of such line. The Ministry proposed by means of reports to keep in touch with the points of greatest demand and to divert wagons to such points in proportion to the need. By such means it was hoped to get more efficient use of the meagre car supply now owned, to avoid a very considerable empty haul caused by the necessity of hauling foreign cars home promptly, and to avoid the delay, cost, and damage due to transfers at junction points. This proposition was met with very determined opposition from the lines which now have a fairly adequate wagon supply. They insisted that it would mean that they would be deprived of their cars to assist lines which had not been forehanded in this respect. A compromise was worked out to the effect that the Ministry might purchase wagons on its own account which might be leased to the various lines in accordance with their needs, and which should be used especially for through traffic. If this plan were acted upon, it would be possible for the Ministry to introduce a standard type of wagon, and it would be possible to gain most of the benefits from a "common use" of wagons without forcing any line to lose control over its individually owned cars. So far the Ministry has not acted upon this plan.

A further step toward uniformity of accounts was taken during the Autumn months, when a committee composed of one of the chief accountants and the adviser to the Standing Committee on the Unification of Accounts and Statistics was appointed to draft a set of uniform station accounting forms with regulations to govern. This committee finished its work before the end of the year. It was not able to report until sometime later, but a final report has now been adopted by the Standing Committee, and a set of forms and regulations has been passed to the Minister of Communications for approval. It appears that the accountants upon the Government railways have been able to make much faster progress toward uniform practice than have officers in other branches of the service. This is to be expected, however, for the revision of accounts can be made at relatively little expense.

Construction during the year was practically nil. Early in the Spring a surveying party was sent out by the Siems-Carey interests to run a line into Szechuan. A route with only one per cent. ruling grade was found viâ the Han River. This in itself is a valuable contribution toward future construction. But at the borders of Szechuan bandits were encountered to such an extent that future work was impracticable. The chief engineer, G. A. Kyle, was captured and held for ransom several weeks. Along with him the bandits took $13,000 in silver, and two companions. Of contracts for new construction there was a multitude, all with Japanese interests. To discuss these in any way would be to enter the subject of international politics.

Preliminary Report for 1918

The approximate traffic return on lines in 1918 has been announced as follows:—

Peking-Hankow	$22,645,909
Peking-Mukden	20,216,657
Tientsin-Pukow	12,734,020
Shanghai-Nanking	4,781,003
Shanghai-Hangchow-Ningpo	2.375,121
Peking-Suiyuan	4,350,765
Chengting-Taiyuan	3,189,722
Taokow-Chinghua	911,998
Kaifeng-Honan	999,756
Kirin-Changchun	1,753,607
Chuchow-Pinghsiang	365,425
Canton-Kowloon	844,787
Canton-Samshui	—
Changchow-Amoy	47,327
Hupeh-Hunan	323,042
Total	$75,539,739

Name of Line	Operating Revenues	Operating Expenses	Net Operating Revenue	Income Debits	Income Credits	Net Income Debits	Surplus (or Deficit) for the year
Peking-Hankow	18,750,636.11	7,009,225.63	11,741,410.48	3,800,685.14	94,537.64	3,706,147.50	8,035,262.98
Peking-Mukden	16,996,642.09	6,529,967.69	10,466,674.40	760,190.52	605,128.13	155,062.39	10,311,612.01
Tientsin-Pukow	10,560,944.92	5,378,013.14	5,182,931.78	3,975,882.02	54,066.41	3,921,815.61	1,261,116.17
Shanghai-Nanking	4,179,808.68	4,203,245.60	1,976,563.08	1,207,888.12	68,664.01	1,139,224.11	837,338.07
Shanghai-Hangchow-Ningpo	2,170,110.54	1,761,839.52	408,271.02	584,263.58	107.715.75	476,547.83	*less* 68,276.81
Peking-Suiyuan	3,718,001.68	2,548,202,39	1,169,799.29	391,168.15	45,524.99	345,643.26	824,156.03
Chengting-Taiyuan	2,527,620 85	1,284,966.54	1,242,654,31	555,351.03	22,157.61	533,193.42	709,460.89
Taokow-Chinghua	936,263.23	385,798.06	550,465.17	410,835.74	129.33	410,710.41	139,754.76
Kaifeng-Honan	1,365,622.90	632,646.91	732,975.99	586,312.53	22,258.96	564,053.57	168,922.42
Kirin-Changchun	1,087,170.26	754,273.67	326,896.59	265,596.32	56,523.26	209,073.06	117,823.53
Chuchow-Pinghsiang	611,086.75	502,916.99	108,169.76	18,908.85	4,242.67	14,666.18	93,503.58
Canton-Kowloon	924,673.43	967,341.81	*less* 42,668.38	620,015.63	18 531.88	601,483.75	*less* 644,152.13
Canton-Samshui	(Not reported)						
Changchow-Amoy	51,122.23	82,126.55	*less* 31,004.32	126,869.29	1,546.93	125,322.36	*less* 156,326.68
Chinese Government Railways	63,873,703.67	30,040,564.50	33,833,139.17	13,303,971.02	1,101,027.57	12,202,943.45	21,630,195.72

Official Returns for the Year 1917

The Ministry of Communications announces that the returns of the Government railways applying to the year 1917 have now been completely tabulated. Since the time required for printing and translation will be considerable, a preliminary statement embodying the more essential results is given to the press in advance of the full report. The table on this page condenses the returns of revenue, expense, and income debits and credits into a single statement.

The Canton-Samshui line has made no report because it is in the hands of the Southern authorities. In spite of this, revenues show an increase of $1,111,983.45 compared with the year before. This is remarkable in view of the fact that from July 27 to October 29 through trains could not be run on the Peking-Hankow line, due to washouts, and that from August 8 to November 26 the north end of the Tientsin-Pukow with considerable equipment, was cut off similarly. Other lines were also interrupted more or less by floods. And on all the northern lines there was considerable embarrassment to traffic due to military manœuvres following the attempted Imperial restoration.

These various causes so increased operating expenses that as a result, net operating revenues decreased slightly—only $86,303.13. But income debits decreased $663,974.90—due principally to the favorable rate of exchange for interest payments—and income credits increased $325,768.68 so that the final surplus for the year is $903,440.45 higher than in 1916.

Income debits are explained to include interest, taxes, discount on depreciated currency, losses by exchange, rents and similar payments. Income credits conversely are rents, gains from exchange, bank interest and similar accruals.

Three full years are now available for comparison under the Uniform Classification of Accounts. The final surplus for each of these years is as follows:—

	Surplus.	Increase over 1915.
1917	$21,630,195.12	11,958,661.05
1916	20,726,755.27	11,055,220.60
1915	9,671,534.67	

The surplus remaining after all charges for the year had been paid in 1915 was equivalent to nine per cent. upon the investment made by the Government in these lines. In 1916 it jumped to over 17.7 per cent., and in 1917 amounted to 18.8 per cent.

If net operating revenue be divided by the investment assets, by lines, the return earned upon the investment is as follows:—

PER CENT. RETURN ON INVESTMENT.

Name of Line	Net Operating Revenue	Investment Assets	Per Cent. Return
1.—Peking-Hankow	$11,741,410.48	$99,132,800.40	11.8
2.—Peking-Mukden	10,466,674.40	61,139,874.01	17.1
3.—Tientsin-Pukow	5,182,931.78	100.181,965.82	5.2
4.—Shanghai-Nanking	1,976,563.08	30,536,757.02	6.4
5.—Shanghai-Hangchow Ningpo	408,271.02	21,869,393.10	1.9
6.—Peking-Suiyuan	1,169,799.29	26,461,744.31	4.8
7.—Chengting-Taiyuan	1,242.654.31	22,011,968.21	5.5
8.—Taokow-Chinghua	550.463.17	7,306,484.01	7.5
9.—Kaifeng-Honan	732.975.99	13,422,206.50	5.4
10.—Kirin-Changchun	326,896.59	6,556,071.89	4.9

PER CENT. RETURN ON INVESTMENT *(contd.)*

Name of Line		Net Operating Revenue	Investment Assets	Per Cent. Return
11.—Chuchow-Pinghsiang		108,169.76	4,808,850.27	2.2
12.—Canton-Kowloon	*less*	42,668.38	15,534,626.15	*less*
13.—Changchow-Amoy	*less*	31,004.32	2,643,031.27	*less*
		$33,833,139.17	$411,605,772.96	8.2

Operating ratio for the year increased slightly over 1916, but is still only 47 per cent. compared with 53 in 1915. Compared with foreign countries, this is a very gratifying result, as will be seen from the following comparisons:—

Austria	75 per cent.
France	63 ,,
Germany	70 ,,
India	52 ,,
Japan	48 ,,
U. S. A.	69 ,,

(Bulletin, No. 100 Bureau of Railway Economics, Washington, D.C., U.S.A.)

The Operating ratio upon the several Government lines in 1917 was as follows:—

Peking-Hankow	37.4	Peking-Suiyuan	68.5
Peking-Mukden	38.4	Kirin-Changchun	69.7
Taokow-Chinghua	41.3	Shanghai-Hangchow-Ningpo	81.2
Kaifeng-Honan	46.3	Chuchow-Pinghsiang	82.3
Chengting-Taiyuan	50.8	Canton-Kowloon	104.6
Tientsin-Pukow	50.9	Changchow-Amoy	159.5
Shanghai-Nanking	52.8		

Chinese Government Railways ... 47.0

In gauging the above results, one reservation must be borne in mind. Upon the Peking-Hankow, the Peking-Mukden, the Tientsin-Pukow and the Peking-Suiyuan, revenues contain a considerable quantity of Peking notes of the Bank of China and the Bank of Communications. These are included at par value. On the other hand, expenses were paid largely in silver.

The Latest "Limelight"

"In the limelight" survives as a theatrical phrase, but it has become a metaphor instead of a statement of fact. There is very little actual limelight in theatres or anywhere else to-day. The electric arc lamp superseded it many years ago and became standard practice for cinematograph work. Now the arc lamp itself is threatened with extinction by the incandescent electric lamp of the "gas-filled" type. In this lamp a filament of tungsten wire is used in a bulb filled with argon, the inert gas whose presence in an atmosphere was discovered by the late Sir William Ramsay. The filament is wound in a close spiral and gives a small but intensely brilliant source of light which, by means of suitable reflectors, can be used to great advantage in projection work. The latest advance in this direction comes from a British firm which has produced a lamp in which the filament is wound in conical form. This gives practically a solid disc of light which can be very easily and accurately focussed so as to throw no shadows on a cinematograph screen. As the wire is held in shape by its own stiffness it has to be made thicker than usual and is, therefore, unsuitable for voltages above 20. Where alternating current is available, a small transformer can be put in to give this low pressure. In laboratories, where low pressure circuits from secondary batteries and other sources are at hand, this lamp is ideal for microscopic and other projection work. It gives an absolutely steady light and involves no trouble in the way of changing carbons, as has to be done with the arc lamp. Great interest has been aroused by this improvement among scientific circles in Great Britain.

Statistics of Chinese Government Railways

Annual Report for 1916 is issued by the Ministry of Communications

Though late in the day there has just been published the second report to cover for an entire year the operations of the Chinese Government railways. It is issued by the Ministry of Communications. The tardiness of the appearance of this report seriously reduces the practical value to the Ministry of the data which it contains. Also, it is, to the public, evidence only of what once was, rather than what is; for internal disorder, financial uncertainty, and foreign relations have so proceeded in the interim, that no one who has any suspicion of the situation in China, will look to this report for facts to confirm his impressions. Still, as an earnest of the intention of this Ministry to give to the public an account of its stewardship, though late, this publication has a high importance. It is probable that in the near future reports will appear much more promptly, and then it will be of the utmost importance that these earlier numbers have been compiled, so that the later results may have a background. During the first few years of any new departure, there are innumerable causes of delay which can be guarded against after those in charge have acquired the necessary experience. Any one who is interested enough to study the report will at once appreciate the number of opportunities for misunderstanding in connection with its compilation. To clear these up must require time.

The report for 1916 follows very closely after the lines of that for 1915. It has simplified the analysis of passenger traffic and that of goods traffic by subdividing each of those tables into ten separate tables. Information as to the average rate, average train load, average journey, average train earnings, and similar data is thus made much more available than before, and the comparative feature is much more apparent. Results for the year are stated in comparison with those of the previous year as follows:—

SUMMARY OF OPERATIONS.

	1916	1915	Increase	Decrease
Operating Revenues	$62,761,720.23	$57,063,000.86	$5,698,719.37	
Operating Expenses	28,842,277.93	30,258,531.66		$1,416,253.73
Net Operating Revenue	33,919,442.30	26,804,469.20	7,114,973.10	
Income Debits	13,967,945.92	17,290,413.47		3,322,467.55
Income Credits	775,258.89	528,517.95	246,740.94	
Net Income Debits	13,192,687.03	16,761,895.52		3,569,208.49
Credit to Construction (Kalgan-Suiyuan line)		371,039.01		
Surplus for the year	$20,726,755.27	$9,671,534.67	$11,055,220.60	

It is an excellent situation when greater traffic can be carried without a proportional increase in expenses, but when it is carried at an actual decrease in expense one's curiosity is aroused. One fears immediately that the properties have not been adequately maintained. While it appears from the report that there was a slight reduction in actual maintenance charges, the decrease in charges were of an accounting nature rather than physical. For example, maintenance of equipment appears to have cost $870,000 less in 1916 than in 1915. However, of this amount $525,000 was due to decreases in depreciation charges. The rule adopted under the Uniform Classifications of Accounts, was that 4 per cent. of the original cost of rolling stock should be set aside annually until the depreciation reserve attained 20 per cent. of this original cost. Under this rule large amounts were charged to operating expenses in 1915 for this purpose. But by 1916 many of the lines were above the 20 per cent. line and so could lower their charges under this head, which they did. The total depreciation reserve of all of the railways combined is equivalent to 26 per cent. of the cost of all rolling stock, hence the reduction in depreciation charges was entirely justifiable.

Nevertheless there was a net decrease in maintenance of equipment to the amount of $335,000. When there is taken into consideration the fact that material prices were very much higher in 1916 than in 1915 this decrease is even more significant. If the equipment was in sufficiently good condition to permit of postponing large material repairs until prices might be lower, all well and good. But at that time there was no end in sight to the period of high prices, if indeed it be in sight now. But there was undoubtedly another explanation. The total system reported an increase in passenger train kilometres of 7 per cent. and in goods train kilometres of 6 per cent. with a load per train 10 per cent. heavier in the case of goods trains. It also reports upon eight of the principal lines that the locomotives ran during the year distances in excess of the average in Great Britain. It seems likely that upon these lines the demands for power were so insistent that there was not the same opportunity for repair as in previous years. There is a public interest in the performance of locomotives upon the several lines, as given in one of the summaries which the report contains. It is reproduced herewith.

KILOMETRES RUN PER ROAD LOCOMOTIVE

Peking-Hankow	64,816	Chinese Government Railways	45,717
Shanghai-Nanking	62,380	Japan	42,614
Taokow-Chinghua	53,559	France	36,772
Tientsin-Pukow	51,327	United Kingdom	40,583
Kaifeng-Honan	49,077	United States	43,637
Kirin-Changchun	46,315	Canton-Kowloon	41,178
Peking-Mukden	41,787	Chuchow-Pinghsiang	39,477
Shanghai-Hangchow Ningpo	34,366		
Canton-Samshui	31,557		
Peking-Suiyuan	25,514		
Changchow-Amoy	21,728		
Chengting-Taiyuan	19,569		

Data from foreign countries includes "Switching" or Shunting kilometrage.

Maintenance of way expenses showed the large reduction of $980,000, which is nearly 20 per cent. This is explained as being almost entirely due to the Peking-Mukden, upon which line in 1915 there were heavy rail renewals. It appears that the old rail which it replaced was not turned into the store for credit until after the first of the year 1916. Hence 1915 figures contained the full expense of the new rail while 1916 figures are reduced by the full value of the old rail. Something over $1,900,000 was expended for sleepers applied to the track. There is nothing to indicate how many sleepers this provided, but an average price of $1.50 each is probably not far out of the way. Assuming such a price to be correct this would compute to about 1,250,000 sleepers or about 180 per kilometre of track. Somewhere between 1,700 and 1,800 sleepers are required per kilometre of track. Hence the program of 1916 would appear to be based upon a ten-year average life. For hard woods or for soft woods chemically preserved this is a reasonable assumption. But a great deal of the sleepers used in China are of Oregon pine which as a rule will not last beyond seven or eight years. On the other hand no small part of the trackage of the Government railways has been in service less than even this period. Hence it may be concluded that in 1916 the rate of sleeper renewal was adequate.

In considering the revenues of the Government Railways in 1916 certain reservations need to be noted. In the first place, the public generally knows that during a considerable portion of the year bank notes of depreciated value were received in payment of freights and fares. It appears that these have been counted in the report of revenue at par value since they were so accepted from the public. At the same time it was probably the case that

expenses had to be paid in silver, or in the silver value of notes. No great quantity of such notes were disposed of in this fashion, for under its analysis of income items, the report shows discount on depreciated currency to be only $580,000. At a discount of 20 per cent. this would represent only about $3,000,000 par value of such notes disposed of. On the other hand operating expenses for the year were nearly $29,000,000 and net income debits were over $13,000,000 calling for a total disbursement during the year of $42,000,000. Hence in the cash item in the balance sheet which stands at about $14,900,000 there could not have been any great quantity of silver. The report admits that there was a large amount of notes but does not state the amount. At the close of 1916, though serious, this was not such a critical matter. Notes at that time represented in truth, "quick" assets. But the value has literally evaporated from them since.

Nearly four and a half million out of the total revenues of $62,700,000 consisted of Government transportation, principally military. This constitutes only about 7 per cent. of the total To the casual observer this is surprisingly low. Of course the casual observers get their impressions from passenger trains mostly, and of passenger revenue military comprises fully 10 per cent. When it is remembered that military rates are only half commercial rates, the military is immediately seen to be using 20 per cent. of the passenger facilities. In addition to that the casual observer knows that a large portion of the military never has a ticket, never pays for sleeping accommodation, never pays for parcel privileges, so that the statistics fail to reflect the gravity of the situation. But it is well to know that this branch of the Government acknowledges its obligations to the railways to the extent of $4,500,000. With this as a background it is more easy to estimate the additional amounts which should be charged for the unremunerated services mentioned above, together with the use of goods wagons as living quarters.

The report explains that certain charges are made for the carriage of service stores which are entered under revenue and then charged against operating expenses. The purpose of this is to exercise a restraining influence upon the officers of the line in the use of their own transportation facilities. In 1916 this amounted to over $1,500,000. Adding to this the military revenue, which, of course, involves merely transfers of credit from the one Ministry to the other, the cash transactions of the lines are reduced by $6,000,000.

One of the most commonly used figures in the measurement of managerial efficiency upon railways is operating "ratio," that is the ratio or per cent. which operating expenses bear to operating revenues. This figure is surprisingly low upon the Government railways, and as would be expected from what has already been said, shows a considerable decrease compared with the previous year. In 1915 it was 53, in 1916 it was only 46 per cent. Compared with 69 in the United States, 76 in Austria, 70 in Germany, and 63 in France, this is excellent. Even in comparison with such lands of low wages as Japan and India, it is still favorable, the Japanese ratio in 1915 was 53 and the Indian in 1913 was 52.

There was considerable fluctuation between the several lines in respect to operating ratio, as the following table made from data in the report will show:—

OPERATING RATIO, BY LINES.

Peking-Hankow	34	Chengting-Taiyuan	59
Peking-Mukden	42	Peking-Suiyuan	60
Kaifeng-Honan	44	Shanghai-Hangchow Ningpo	80
Taokow-Chinghua	46	Kirin-Changchun	81
Shanghai-Nanking	50	Chuchow-Pinghsiang	95
Tientsin-Pukow	50	Canton-Kowloon	105
Canton-Samshui	51	Changchow-Amoy	158

The effect of rate levels was not inconsiderable upon the showing of the various lines in this connection. For example, if Peking-Hankow rates were reduced class by class to the level of those on the Peking-Mukden, its revenue would be reduced by about $2,800,000 and its operating ratio would be raised to about 46. If the Shanghai-Nanking could collect the same rates per unit as the Peking-Hankow, its revenue would be trebled and its operating ratio reduced to about 20. But if the Shanghai-Nanking should attempt to collect fares and freights at the same rate level as the Peking-Hankow, it would lose almost its entire business because of water competition. It would then be in a position similar to that of some of the lines at the end of the list given above, that is, its operating expenses would be greater than its revenues.

Some interesting comparisons can be made from the report with respect to the effect of rates upon volume of business. At least the comparisons lead to interesting speculations. For example, on the Shanghai-Hangchow-Ningpo, passenger rates are but little higher than on the Shanghai-Nanking, and its passenger density more nearly approaches that of the Shanghai-Nanking than any other line in the North, although only about half that of the latter line. Its freight rates, on the other hand, are nearly three times as high, class by class, as those on the Shanghai-Nanking, and its freight density is only one-fifth that of the Shanghai-Nanking. The Chengting-Taiyuan line has an average rate on mineral products nearly twice as high as that upon a similarly short coal carrying line, the Taokow-Chinghua, and its density of traffic in mineral products is barely half that on the Taokow-Chinghua. Yet with a rate half again as high on agricultural products, the Chengting-Taiyuan has a traffic in those commodities nearly three times as dense as that on the Taokow-Chinghua. This illustrates the care that must be used in jumping at conclusions, as well as the fact that no rate however low will produce a highly dense traffic if the commodities are not produced in abundance. But if the commodities are at hand in quantities an unduly high rate will certainly prevent their being shipped by rail. One sees this fact illustrated upon certain lines, where porters are using the railway track as a highway to carry goods in competition with the railway itself.

Perhaps the most useful information which the report contains, at this juncture when the shortage of goods wagons is so critical, is a comparison of performance between the different lines with respect to this class of equipment. The subject is discussed fully in the report but can be treated only synoptically here. In brief the equipment owned by each line is added to or reduced by the amount gained or lost in interchange with other lines. The capacity in tons of the final amount of equipment available is then divided into the total number of tons of goods carried in order to arrive at the average number of times each car was loaded to capacity during the year. It is assumed (with certain exceptions) that one day is required to load and another day to unload each time a car is so loaded to capacity. Therefore, if the number of times a car was loaded be multiplied by two, and the product be subtracted from 365 (the number of days in the year) the remainder will be the number of days left for actual transportation. Actual transportation is measured in ton kilometres. Therefore, if the number of ton kilometres carried by a given line be divided by the tons capacity of equipment which it had at its disposal, and this quotient be divided by the number of days which were left in which to perform the labor, the result will be large or small depending upon whether the cars were moving under load or standing empty, were moving empty or not moving at all, were loaded to capacity or only partially loaded. The results show some wide variations as between the various lines.

TON KILOMETRES PER RUNNNIG DAY PER TON OF CARRYING CAPACITY.

Chuchow-Pinghsiang	84.3 (*)	Chengting-Taiyuan	24.9
Peking-Hankow	67.4	Kirin-Changchun	23.4
Shanghai-Nanking	66.7 (*)	Peking-Suiyuan	19.7
Taokow-Chinghua	61.1 (*)	Canton-Kowloon	11.3
Tientsin-Pukow	54.0	Shanghai-Hangchow-Ningpo	7.4
Peking-Mukden	43.5	Changchow-Amoy	5.3
Kaifeng-Honan	34.0	Canton-Samshui	1.2

* Only one day instead of two has been allowed on these lines for loading and unloading.

The high record upon the Chuchow-Pinghsiang and the Taokow-Chinghua is explained in part by the fact that upon those two lines there is practically but one class of traffic. This moves regularly and the movement of equipment can be programmed to advantage. Upon lines with a general traffic there is a considerable amount of empty movement which is unavoidable, and an irregular offering of freight so that a considerable idleness results in spite of all precautions. Added to this, there is the effect of the cars which troops keep in idleness for living quarters. Nevertheless, it would seem that a very good case is made for a more

free movement from one line to the other in order to relieve temporary shortages. We know, of course, that the equipment of each line is considered the individual property of that line, rather than as the property of the Chinese Government, and that every official rather scouts the idea that any other official is to be trusted with equipment not his own. But if there are practical difficulties explaining why the shortage on the Shanghai-Nanking cannot be relieved by the very evident surplus on the Shanghai-Hangchow-Ningpo, a line under the management of the same set of officers, this comparison at least points out that serious efforts should be made to overcome those practical difficulties. What excuse is there for the Peking-Suiyuan, a line under full Chinese control for moving its loads an average of less than 20 kilometres a day, when the Peking-Hankow, another line under full Chinese control, is able or is forced to run over three times as far? The few miles of heavy grades over the Hankow pass are not sufficient explanation. The answer is that the controlling authorities have not had at hand the information upon which to base an order requiring the one line to lend equipment to another line more in need of it. The year 1919 should show more even results.

Another comparison of interest is that with respect to employees. This is the first public information on the subject for Chinese railways. There has been a prevalent impression that Chinese railways are heavily over-manned. It has been said the transportation of tea and pencils in the general offices occupied as large a force as the transportation of persons and goods upon the line. But according to the report, China is but little worse off in this respect than other countries in the East. China's 59,857 employees represent an average of 8.8. men per kilometre of track. Japan is said to have 8.6 and India 8.1 computed on the same basis. However, compared with 2.7 in the United States and 1.7 in Canada it would seem that there is no labor shortage in China just yet. However, the basis used is not quite satisfactory. It is better than "kilometre of *line*," but does not adequately take into consideration the effect of the amount of business transacted. On this subject there is much the same fluctuation between the several lines that has been noted in other connections.

EMPLOYEES PER KILOMETRE OF TRACK OPERATED.

Changchow-Amoy	5.4	Peking-Suiyuan	10.1
Taokow-Chinghua	5.6	Canton-Samshui	10.3
Kaifeng-Honan	6.4	Shanghai-Hangchow-Ningpo	10.5
Chengting-Taiyuan	7.1	Chuchow-Pinghsiang	11.0
Peking-Hankow	7.1	Peking-Mukden	11.2
Canton-Kowloon	7.6	Kirin-Changchun	12.8
Tientsin-Pukow	8.2		
Shanghai-Nanking	8.8		

Chinese Government Railways 8.8

The high number of employees upon the Kirin-Changchun is curious. This line is managed by Japanese higher officials, in connection with the South Manchuria railway. While no average for the South Manchuria is given, the average on the Chosen railways is stated as 4.5 men per kilometre of track—but little over one-third as many as on the Kirin-Changchun. Other data in the report thoroughly contradicts that the high average on the Kirin-Changchun is due to any density of traffic.

The more significant statistics for the year are as follow:—

	Total.	Per kilometre of line	
		1916	1915
Investment Assets	$413,953,795	$75,402	$75,225
Operating Revenues	62,761,720	11,425	10,477
Operating Expenses	28,842,278	5,250	5,556
Operating Ratio	46	(1915—53)	
Net Operating Revenue	33,919,442	6,175	4,921
Surplus after Fixed Charges	20,726,755	3,773	1,841
Locomotive Kilometres	31,221,631		
Train Kilometres	21,833,898	3,975	3,763
Passengers Originated	28,658,031	5,217	4,633
Passenger kilometres	2,064,482,065	375,827	349,160
Average Passengers per Train	201	(1915—199)	
Average rate per Passenger Kilometre (cents)	1.06		
Tons, Goods Originated	16,644,437	3,031	2,720
Ton kilometres	2,620,067,494	476,969	413,289
Tons per Train	227	(1915—206)	
Average rate per ton-kilometre (cents)	1.33		

Importance of the Far Eastern Trade with the U.S.

Eighteen per cent. of the total trade of the United States, including exports and imports, during 1918 was done with the Far East. The imports from the Far East amounted to $1,041,899,402 and exceeded those of any other grand division, representing 34 per cent. of the total imports into the United States, while the exports to the Far East totaled $603,063,877 and were next to Europe and North America in volume, representing 10 per cent. of the total export trade of this country. The relative importance of Far Eastern trade can be appreciated from the following figures showing percentages of total trade of the United States with all grand divisions in 1918:—

Country.	Imports from	Exports to	Total.	Per cent.
Europe	$318,127,305	$3,858,705,905	$4,176,833,210	46
North America	976,400,347	1,325,582,571	2,301,982,918	25
Far East	1,041,899,402	603,063,877	1,644,963,279	18
South America	609,371,205	302,840,975	912,212,180	10
Africa	85,506,462	59,199,319	144,705,781	1
Total...	3,031,304,721	6,149,392,647	9,180,697,368	100

This enormous increase has taken place practically since 1914 when the total trade with the Far East amounted to only $491,579,139 or less than 13 per cent. of the total trade of this country. The 235 per cent increase in Far Eastern trade since 1914 is the largest single increase registered in the trade with any grand division since that year. Other percentages of increase are Africa, 227 per cent; South America, 185 per cent: North America, 149 per cent; and Europe, 97 per cent.

Share of Each Country in Import and Export Trade with Far East

Japan led in the shipments to the United States from the Far East in 1918, supplying 29 per cent. The other countries are included as follows:—

Imported from—	Value.	Per cent.	Imported from—	Value.	Per cent.
Japan	$301,919,771	29	Dutch East Indies	$75,074,667	7
Straits Settlements	150,231,422	15	Australia	73,289,997	7
China	140,892,573	14	All others	84,867,743	8
British India	129,688,009	12			
Philippines	85,935,220	8	Total...	1,041,899,402	100

The export trade to the Far East was also centered in our trade with Japan and 45 per cent. of our exports were shipped to Japan:—

Exported to—	Value.	Per cent.	Exported to—	Value.	Per cent.
Japan	$273,819,586	45	Dutch East Indies	$23,376,469	4
Australia	79,568,398	13	All others	73,789,824	12
China	59,134,960	10			
Philippines	52,976,182	9	Total...	603,063,877	100
British India	40,398,458	7			

The Far East is rapidly coming into its own with relation to our foreign trade and the war should teach us the important lesson that while we have been using Far Eastern products for many years we have been buying them through Europe, and with our own ships on the Pacific we may now buy them direct. The benefits are apparent, for in addition to building up Far Eastern credits in this country against which oriental merchants may draw, in the form of manufactured goods, the tribute which we have paid for many years to European shipowners and bankers for handling our Far Eastern trade for us will be diverted to our own coffers.

In order to hold this trade, however, we should recognize the necessity and value of investing American capital in Far Eastern transportation and industrial enterprises, not only because these investments, especially in China, are profitable and safe, but also because our interests should be as great as European interests in those countries where trade follows the loan.—Prepared by the Far Eastern Division, Bureau of Foreign and Domestic Commerce.

sways all humanity. So is it with towns and lands. The modern industrial development of China has been stimulated by the transportation facilities in and to the treaty ports in general and Shanghai in particular and in proportion as these are cultivated so will internal development accelerate.

The accusation will naturally be made that in advocating the development of Shanghai foreigners are influenced purely by the pecuniary gains which will fall to them as the result. The more conservative Chinese statesmen hold that foreign influence which (apart from actual diplomacy) enters through the treaty ports has only the effect of destroying the ancient culture without any benefit to China. The most pessimistic point to the steady deterioration in China since the advent of the "sea-ghosts" and are confident that a process of devolution is going on which will culminate in the loss of the country's independence. On the other hand, the irritable "sea-ghosts" while they acknowledge that individually they hope each for his reward, nevertheless believe that cooperation between nations and the development of transportation and commerce cannot but work for the mutual benefit of nations. A large Shanghai means a large productive and consuming China and also a large local prosperity, for Chinese even more than for foreigners.

The Shantung Railways Agreement

The following is a translation of the Chinese text of the agreement covering the Tsi-Shun and Kao-Hsu Railways published by the Waichiaopu:—

PREAMBLE.

For the construction of the railways from Tsinan (Shantung) to Shunteh (Chihli) and from Kaomi (Shantung) to Hsuchow (Kiangsu) (hereinafter called the Two Railways), the Government of the Chinese Republic (hereinafter called the Government) enters upon the following Agreement, a protocol to the final loan agreement, with the Representative of the Japanese Industrial Bank (hereinafter called the Bank) which represents the Japanese Industrial Bank, the Taiwan Bank and the Bank of Korea:—

Article 1.—In order to meet the expenditure for the construction of the Tsinan-Shunteh and Kaomi-Hsuchow Railways, the Government will entrust the Bank for the issue of the Chinese Government Tsi-Shun Railway Gold Loan and the Chinese Government Kao-Hsu Railway Gold Loan (hereinafter called the two Railway Loans).

If it is found after due investigation that the lines fixed will not be profitable for business, the Government may negotiate with the Bank for alterations and changes.

Article 2.—The Government shall at once draw up an estimate for the various expenses in connection with the two railways and submit same to the Bank for approval.

Article 3.—The term of the loan shall be forty years; and in the 11th year of its issue, the redemption shall commence by instalment in each year.

Article 4.—As soon as the Formal Loan Agreement is signed between the Government and the Bank, the construction shall begin.

Article 5.—The Government shall give the following security to the Bank for the payment of coupons and the redemption of the loan:—

All the properties and the incomes of these two railways, both the present and the future.

Without the permission of the Bank the Government shall not make use of the above properties and incomes as security to a third party.

Article 6.—As to the price of the bonds, the rate of interest and the net proceeds to be received for the two railway loans, they shall be fixed in accordance with the circumstances of the time, and the interest of the Government.

Article 7.—All details which have not been provided for in this agreement shall be fixed between the Government and the Bank.

Article 8.—This Agreement shall form the basis for the formal Loan Agreement of these two railways, which shall be signed four months after its conclusion.

Article 9.—After the signing of this, the Bank shall make an advance of Japanese Yen 20,000,000 to the Government without commission or any deduction.

Article 10.—The interest of the above advance shall be 8 per cent., i.e., Yen 8 per year for each Yen 100.

Article 11.—A similar amount of the Government Treasury Bonds shall be given by the Government for the above advance.

Article 12.—In a period of each six months these bonds shall be changed, when an interest for this period shall be given to the Bank.

Article 13.—After the conclusion of the Formal Loan Agreement, the Government shall refund the above advances by the proceeds first realized by the sale of the bonds.

Article 14.—The transactions connected with the delivery of the proceeds, the payment of interest and the redemption of the above advance shall be done in Tokyo.

Two copies of the above agreement shall be made in Chinese and Japanese and one each be kept by the Government and the Bank. Should doubts arise on any point, the Japanese version shall be followed.

(Signed) CHANG CHUNG-HSIANG,
and "HSIAO-YA-YIN ER LAN."

Dated 29th day, 9th month of the 7th Year of the Chinese Republic, etc.

In addition to the above there are two notes addressed to the Japanese Foreign Minister by Mr. Chang Chung-hsiang, stating that the Chinese Government has decided to contract loans from the Japanese capitalists for the construction of the following railways:—

1.—Between Kaiyuan, Hailung and Kirin.
2.—Between Chanchung and Taonan.
3.—Between Taonan and Jehol.
4.—A second line between Taonan and Jehol.
5.—Between Tsinan and Shunteh.
6.—Between Kaomi and Hsuchow, etc.

The Japanese Foreign Minister's Note states that in order to cement the good relations between the two Neighbouring Nations, the Japanese Government has made the following proposals in connection with the Shantung Problem:—

1.—With the exception of Tsinan, all the Japanese troops along the Kiaochow-Tsinan Railway shall be withdrawn to Tsingtao.

2.—The police forces for the protection of the Kiaochow-Tsinan line shall be organized by the Chinese Government.

3.—An adequate amount of money shall be paid by the Kiaochow-Tsingtao Railway to meet the expenses of the above police forces.

4.—Japanese shall be engaged in the police headquarters, training institutes, etc.

5.—Some Chinese shall be selected and appointed officers for Chiaochow-Tsinan Railway.

6.—It is now definitely fixed that the Kiaochow-Tsinan Railway and its offices shall later on be under the joint control of the Japanese and the Chinese.

7.—The civil offices which have now been established shall be abolished.

All the above communications were duly acknowledged and approved by either party.

In response to a demand for export to Japan and China the price of Madras indigo, which fell to a very low level in the latter part of 1917 has been gradually rising since January, 1918. A Government crop report issued at the end of October, 1918, states that the area under indigo in the presidency is estimated at 114,650 acres as against 275,700 acres on the same date last year. The decrease is general, but is particularly heavy in the area where indigo is grown as a dry crop in the southwest monsoon season. In these districts the failure of the monsoon the past year has largely prevented sowings, except in Cuddapah, where the season was better. The general decrease in area is stated to be due to the dull state of the market throughout 1917 and the consequent difficulty of disposing of old stocks.

Stations fail to communicate between Kashgar, Urumchi and Lanchowfu as specified in Clause 2 hereof, such indemnity not to exceed the amount accruing to the Company under this Agreement, such guarantee in writing of the responsible third party to be in the hands of the Government before the date the equipment arrives in Shanghai.

10.—The Government agrees to arrange all transportation facilities to purchase all necessary material and to select the most reliable and experienced Engineers at their disposal at the earliest possible moment in order that the three stations herein purchased may be completed without undue delay.

11.—This Agreement shall be executed in two exemplars each of Chinese and English versions. In case of discrepancy or in the event of doubt arising regarding the interpretation of this Agreements the English version shall rule. Immediately after execution this Agreement shall be officially communicated to the British Minister in Peking by the Waichiaopu.

In Witness Whereof this Agreement is signed on behalf of the Government of the Republic of China by the Ministry of Communications, and sealed with the Seal of the Ministry of Communications, and is signed on behalf of Marconi's Wireless Telegraph Co., Limited by its duly authorized attorney.

The Siems-Carey Railway Agreements

In 1915 American financiers began to renew their interest in Chinese affairs, and the American International Corporation was formed to undertake work in China and South America, the stress being placed upon China. In this Corporation the National City Bank of New York played the most prominent part, and in conjunction with many of America's leading industrial organizations the Corporation started its work of investigation of foreign fields.

The late Mr. Willard Straight was one of the most enthusiastic promoters of the new organization, and was chosen as one of the Vice-Presidents under Mr. Charles Stone, the senior partner of Stone and Webster, who had been elected President. The Standard Oil Company of New York furnished one of its most experienced men in foreign finance, Mr. R. P. Tinsley, who became the Secretary and Treasurer.

A St. Paul contracting firm, Siems-Carey, became interested in China, and this firm upon an understanding with the Corporation sent Mr. W. F. Carey to look into the prospects of railway construction in China. Mr. E. T. Gregory, formerly of Lee, Higginson and Company was appointed representative of the Corporation at Peking.

In April, 1916, the agreement was originally made for the conservancy of the Grand Canal in Shantung. This agreement was later rewritten to include the Grand Canal in Chihli. In May, 1916, Siems-Carey negotiated an agreement for the construction of some two thousand miles of railway in China.

It is surprising to find that Minister Tsao Ju-ling has published these agreements as secret contracts. We feel safe in stating that the several Legations in Peking were fully aware of their existence, and had copies of same. From time to time various parts of the agreements have been published, and have been made subjects for newspaper discussion. The widest publicity has already been given, and there is no reason why the agreements should not be published in full, and it is due the American International Corporation that the Chinese Government immediately remove the stigma put upon the transactions by publishing them as secret agreements.

Now that the war is over it is hoped that work will be resumed upon both the Grand Canal and the proposed railway lines. After all, China can lose nothing by the immediate extension of her system of communication, and the agreements that have been made public contain nothing that is not to the interests of the Chinese nation. For the first time the building of railways has been placed upon a purely commercial basis, and politics entirely removed.

Peking, May 17th, 1916.

Messrs. SIEMS AND CAREY,

Peking, China.

GENTLEMEN,—We herewith acknowledge receipt of your letter bearing date of May 15th, 1916, by which, for the purpose of carrying out verbal agreements resulting from negotiations had between us respecting the building of steam railroads in the Republic of China, you have submitted your proposition for our acceptance.

We have given the matter full consideration and in behalf of the Republic of China we hereby accept the same and agree as follows :—

1.—The Republic of China shall locate, build, and work steam railroads in China, the aggregate of which shall be fifteen hundred (1,500) miles in length. We specially pledge to build said lines between the following points and such intermediate points as may mutually be considered advisable, namely :—

From Hengchowfu in the Province of Hunan to Nanning in the Province of Kwangsi.
From Fengcheng in the Province of Shansi to Ninghsia in the Province of Kansu.
From Ninghsia in the Province of Kansu to Lanchowfu in the Province of Kansu.
From Chungchow in the Province of Kwantung to Lu Kwei in the Province of Kwantung.
From Hangchow in the Province of Chekiang to Wenchow in the Province of Chekiang.

2.—If after examination it shall be mutually decided between us that any part of said railroad locations shall not be desirable, such undesirable parts may be abandoned : but in that event the Government of China will then locate and construct an equal amount of mileage of railroads upon other locations within said Republic. The locations of the additional lines to complete the total mileage above stipulated to be decided by mutual agreement between us.

3.—The said Republic reserves the right at or before the time of the completion of the above-mentioned 1,500 miles of railroad, to choose one expert railroad civil engineer, in which event you shall choose one, and the two thus chosen shall choose a third, to be known as the "Board of Engineers," and said Board shall determine whether the work then being done, or theretofore done, is being or has been economically performed, and if the majority of said Board shall decide that the work has been and is being done in an economical manner under this Agreement as compared with the cost of construction of other Chinese railroads, all things considered, then the said Republic obligates itself to construct an additional 1,500 miles of railway within said Republic, to be located by the mutual consent of the parties hereto; and all and singular the provisions of this Agreement shall extend and apply to the said additional mileage of railroad in the same manner and to the same effect and purpose as though said additional mileage had been originally made a part of and included in this Agreement; with this sole exception—that the interest rate and discount to be charged upon the bonds to be issued by the said Republic for the construction of said additional 1,500 miles of railroad shall not be higher than the prevailing interest rate and discount for other Chinese railway bonds at that time.

If the said Republic shall build any extensions or branches of said first mentioned 1,500 miles, the same shall be one under and pursuant to the provisions of this contract as though originally included herein, excepting that the mileage thereof shall be reckoned a part of the aforesaid additional 1,500 miles and subject to the above exception respecting the interest rate and discount on bonds to be issued therefor.

4.—For the purpose of providing the money with which to construct, equip, and operate said railroads the said Republic shall, and it hereby obligates itsert to, issue gold bonds, in usual form, in the sum of one million ($1,000,000) dollars per year in each and every year from the time that this contract shall take effect, as herein provided, until all of said railroads included in or contemplated by this contract shall have been fully completed, equipped and put into practical operation, and you shall obligate yourselves to sell said one million ($1,000,000) dollars of bonds per year for and during said term pursuant to the provisions of Paragraph Five (5) of this contract. But if in any year of said period said Republic shall be satisfied with the market value of said bonds as fixed by the quotations of the New York Stock Exchange, for the time being, for Chinese railroad bonds, so that it shall appear to be to the advantage of said Republic to issue additional bonds and increase the activity in building said railroads, then and in any such case said Republic shall issue an additional one million ($1,000,000) dollars of said bonds for that year, and by mutual consent of the parties hereto said Republic may issue an aggregate of not to exceed ten million ($10,000,000) dollars of said bonds in any one year of said period and in as many years during the life of this contract as may be mutually agreed upon.

All bonds issued in pursuance hereof shall bear interest at the rate of five (5) per centum per annum, payable semi-annually, and each issue of bonds shall be made payable by their terms fifty (50) years from and after the date thereof.

As to the form of the bonds it is to be agreed upon by the Chinese Government or by the Chinese Minister in Washington and yourselves or your assigns as soon as possible after the signature of this Agreement, but if hereafter the money markets in New York or other countries require any modification of the form of the bonds, except in anything that affects the amount of the Loan and the liability of the Chinese Government which are not to be touched at all, such slight modifications may be made to meet the views of the money markets by you or your assigns in consultation with the Chinese Minister in Washington. Any modifications are to be reported at once by you or your assigns to the Chinese Government.

The bonds are to be engraved entirely in the English language and shall bear a facsimile of the

signature of the Minister of Communications and of his seal of office in order to dispense with the necessity of signing them all in person; but the Chinese Minister in Washington shall, previous to the issue of any bonds, put his seal upon each bond with a facsimile of his signature as a proof that the issue and sale of the bonds are duly authorized and binding upon the Chinese Government.

Such bonds are to be numbered consecutively and as many bonds as may be needed are to be properly engraved under the supervision of yourselves or your assigns, and after they are sealed by the Chinese Minister in Washington as herefore provided are to be countersigned by you or your assigns.

If any of the bonds herein mentioned are lost or destroyed, a reissue of any thereof is to be made in the amounts respectively called for by such lost or destroyed bonds, but proper proof of the loss or destruction must be given in the usual form to you or your assigns and the Chinese Minister in Washington for examination and record, and the requisite guarantee is to be obtained by you or your assigns from the respective claimants concerned who shall defray all expenses connected with such reissue of bonds lost or destroyed, and who under the said guarantee shall undertake to indemnify the Chinese Government and or you and your assigns for any loss sustained by reason of the issue of bonds in the place of the bonds lost or destroyed.

No payment of the principal of any such issue of bonds shall be made until after the expiration of twenty-five (25) years from and after the date thereof, and the bonds shall so provide. But payment of principle shall commence on the first day of the twenty-sixth (26th) year from and after the date of issue and shall thence be made and shall continue to the full maturity thereof at the rate of four (4) per centum of the par value thereof per year, and in each and every year of said principal paying period the said Republic shall pay and retire, by lot in the usual manner, four (4) per centum of the face value of such issue, and the right to pay and retire in that manner shall be reserved and expressed upon the face of all bonds of each and every said issue, and the payment of the principal of each and every issue of said bonds shall be made in that manner.

It is the intention that the principal paying period of each issue of bonds shall not begin to run until the beginning of the twenty-sixth (26th) year from and after the date thereof.

5.—The above bonds to be sold by you at the New York Stock Exchange market rate for Chinese railroad securities for the time being, from which you shall be allowed and deducted a banker's or broker's commission of five (5) per centum of the par value of bonds for selling, which shall represent all expenses in connection with the issue of the said bonds such as underwriting, commission and brokerage, telegraph charges, advertising, postage, engraving, and printing of prospectus and bonds, stamp and legal fees.

6.—You shall have charge of and direct the work of locating, surveying, erecting water tanks and buildings of all kinds, constructing and equipping all railroads included in or contemplated by this contract, and also of buying the materials, rolling stock, machinery, tools, appliances, and equipment and furnishings therefor and installing the same. And you shall be paid for your services therefor a sum equal to five (5) per centum of the aggregate amount of all purchases made in behalf of said railroad, excepting purchases of land for any purpose, in each and every year from the time that this contract shall take effect, until the last of said bonds have been fully paid. The said railroads, and all construction, surveys, locations, equipment, materials, rolling stock, machinery, tools appliances, installations, commissions, wages, salaries, and everything whatsoever aforesaid, shall be paid from the proceeds of the sales of all of said bonds and said proceeds shall not be used or applied to any other use or purpose nor shall any part or portion thereof; and it is expressly understood that the moneys derived from the sale of all of said bonds shall be deposited and kept in a responsible bank to be mutually designated and agreed upon by us in advance, and the same shall be drawn and paid out from said bank for the uses and purposes herein expressed, and for no other uses or purposes whatsoever.

In purchasing machinery and materials preference shall be given to those of American manufacture when price and quality are at least equal; but whenever it shall be possible to purchase suitable supplies and materials of Chinese manufacture, price and quality being at least equal, the same shall be given preference over those of American or other manufacture.

It is further agreed that the Ministry of Communications shall secure and purchase any and all lands required for rights of way and/or other purposes in connection with the terms of this Agreement, that such land purchased shall be paid for from the proceeds of the loan.

7.—To secure payment of all of said bonds, issued or to be issued, said Republic shall at the time that the first issue of said bonds shall be made, execute and deliver to you a first Trust Mortgage upon said entire railroads, built or to be built, together with all rolling stock, equipment, real estate, machinery, buildings, tools, and all of the physical properly connected with or appurtenant thereto on hand or to be added, in accordance with the forms of the American Law which are customary and usual in such cases to secure payment of said first issue of bonds and of all issue of bonds subsequently issued. The Trustee to be selected and chosen by mutual agreement of the parties.

Until said Trust Mortgage shall be executed in form the provisions of this Agreement in respect of the mortgage are to be construed and treated as of the same purport and effect as a mortgage customarily executed and delivered in the United States to a Trustee, for the purpose of securing loans to and bonds issued upon railway properties. It is further agreed that if the financial markets in the United States or elsewhere require the execution of another deed or deeds or mortgage or mortgage at any time, for the better protection of the bonds, or require the appointment of another Trustee under the American Law, you shall discuss the same with the Minister of Communications, who will arrange the same as the exigencies of the case may require. The expense of the appointment of another Trustee in such case to be borne by you.

8.—The Executive Head of the railroads shall be a Chinese Director-General appointed by the Government, who shall be assisted by a Chief Engineer, who shall have charge of the Engineering Department; a Traffic Manager, who shall have charge of the Traffic and Operating Departments; and an Auditor, who shall have charge of all matters usually pertaining to that office, and each shall be qualified by practical experience, shall be of approved ability and integrity, shall be chosen, recommended and vouched for by you, and appointed by the Director-General if he shall approve of the character and qualifications of the person nominated; but if he shall not approve in any case, he shall call upon for another recommendation for the office. In event the Director-General shall consider any head of a department above-mentioned unfit to act, he shall upon consultation and mutual agreement with you cause his dismissal. It being understood that all of the above heads of departments shall at all times be men recommended by you. And if you shall subsequently discover that the standard of efficiency may be improved by substituting for any appointee another likewise recommended and vouched for, the incumbent shall be removed by the Director-General and the other substituted as above provided.

On or before the twenty-fifth (25th) day of each month you shall render a lump sum estimate to the Director-General showing the funds required to meet the expenditures for the ensuing month, and upon the approval of the Director-General, he shall notify the Auditor who shall prepare and turn over to you a check for said amount in your favor.

It is agreed that requisitions for equipment and material shall be submitted to the Director-General for his information and approval.

It is agreed that all contracts contemplated to be let by you shall be approved by the Director-General.

It is agreed that any check of twenty-five thousand ($25,000) dollars or more shall be countersigned by the Director-General.

It is agreed that any and all emergency expenses which pertain to the work contemplated by this Agreement, shall receive the approval of the Director-General.

It is further agreed that the rules of accounting shall be according to the rules prescribed by the Ministry of Communications.

9.—The salaries of all officers shall be fixed by mutual agreement between you and the Minister of Communications of China.

10.—Proper and correct books, showing all transactions of income and expenditures in detail and by items, shall always be kept, and both parties shall always have access to and inspection thereof.

11.—The time within which work shall commence under this contract, bonds issued and secured, and preliminary organization effected, shall be within six (6) months from and after the date of acceptance hereof unless prevented by extraordinary conditions.

12.—The said Republic shall assist you in every way possible in obtaining and acquiring all necessary rights of way, railroad yards, station grounds, sidings, gravel and sand pits, rock quarries, and other necessary concessions.

13.—All plans and estimates of construction shall be submitted to the Minister of Communications in advance for his information and approval, and said Republic may employ an Inspector or Inspectors to inspect all work as it progresses. And when the said railroads shall have been completed, you shall give notice thereof to the Minister of Communications in order that he may send his Inspector, or Inspectors, to decide whether the work has been done according to specifications.

14.—Your said proposal having been executed and submitted in both the Chinese and the English languages, each being a true and correct translation of the other and being executed in triplicate in each of the said languages, this acceptance thereof shall likewise be executed in the Chinese and English languages, each being a true and correct translation of the other in triplicate in each language. It is understood and agreed that in the event that difference of dispute shall at any time arise respecting the construction and meaning of either said proposal or this acceptance or any part of either, the English text shall prevail in determining each difference or dispute. One copy of the English and the Chinese text of this Agreement shall be held by the Ministry of Communications; one copy of the English and Chinese text by the Ministry of Foreign Affairs and one copy of the English and Chinese text by Siems and Carey.

15.—It is understood that your said proposal and this acceptance thereof, shall be construed together and as one instrument, and that all and singular the provisions thereof shall extend and apply not only to you, and the signers of the said proposition, but to you and each of your heirs, executors, administrators and assignees, who shall be of American nationality.

16.—The said proposal and this acceptance thereof are hereby made effective and binding upon the respective parties thereto, and the same shall be and continue in force from now henceforth according to the terms thereof.

17.—And it is further agreed that in the event that the parties hereto shall mutually decide that

further details are required to more fully and truly express the true intents and purpose thereof, this Agreement shall be reformed to include the same.

IN WITNESS THEREOF, the Republic of China has caused this instrument to be signed and executed by its Ministry of Communications acting by its authority and on its behalf, this 17th day of the fifth (5th) month of the fifth (5th) year of the Republic of China : being the 17th day of May, 1916.

THE REPUBLIC OF CHINA,
By TSAO JU-LIN,
Its Minister of Communications.

The above proposition is accepted by the undersigned in full and in detail :

SIEMS AND CAREY,
By W. F. CAREY.

ROY. S. ANDERSON.
Peking, May 17th, 1916.

Peking, May 17th, 1916.

Messrs. SIEMS AND CAREY,
Peking, China.

GENTLEMEN,—I have the honor to acknowledge receipt of your written communication, bearing date of this day, submitted by you as a supplement to be considered and construed to be a part of your proposition to the Republic of China, likewise dated on this day, respecting the building of steam railroads in said Republic, as fully to all intents and purposes as though set forth at length in your said original proposition.

We have given the same full consideration, and in behalf of said Republic of China, I, now in my capacity of Minister of Communications of the Republic of China and by authority and in behalf of said Republic, hereby accept the same and agree as follows :—

In addition to the payment to you by said Republic of a sum equal to five (5) per centum of the aggregate amount of all purchases made in behalf of said railroads (excepting purchases of land for any purpose) in said proposition stipulated for your services therein mentioned, said Republic shall also pay to you a sum equal to eight (8) per centum of the aggregate amount of all other moneys expended for the construction of all of said railroads. As soon as any section thereof shall have been fully completed and put into commercial operation, then said eight (8) per centum shall cease upon such completed sections that are being commercially operated. Settlements and payments for both the five (5) per centum and the eight (8) per centum aforesaid, to be made at the end of each six (6) months from the date of the beginning of said work. And further, for handling and selling said bonds as in said proposition provided, as well as for the said services by you to be performed, twenty-five (25) per centum of the net profits derived from operating said railways, after paying all maintenance, operating and bond charges, shall be paid yearly to you at the end of each fiscal year up to the time of the payment of the last of said bonds, when all your rights shall cease and this contract shall terminate. By the term " bond charges " as above used, is meant the semi-annual interest on each issue of bonds during the first twenty-five (25) years from and after their date (during which time no payments of principal shall be made) and the semi-annual interest and four (4) per centum of the principal of each said issue to be paid in each and every year of the last twenty-five (25) years of the period for which said bonds are to run.

It is further understood that before any division of net profits shall be made in any year as herein provided, there shall be reserved and set aside out of the said annual net profits, a sum equal to five (5) per centum of said annual net profits for a replacement fund, and a separate fund shall always be maintained for that purpose; it is understood, however, that if at any time said replacement fund shall have accumulated a sum in excess of the actual and reasonable requirements of said fund, such excess, by our mutual consent, shall be divided between us, you to receive twenty-five (25) per centum thereof as above provided.

It is further agreed that no commissions whatsoever shall be paid to you upon the salaries of any officer mentioned in this Agreement.

Respectfully yours,

REPUBLIC OF CHINA,
By TSAO JU-LIN,
Its Minister of Communications.

Supplementary Agreement.

THIS SUPPLEMENTARY AGREEMENT is to be considered and construed to be a part of the proposition agreed to between the authorized representative of the Republic of China in the person of the Minister of Communications and Siems and Carey represented in the person of William Francis Carey, respecting the building of steam railroads in said Republic, bearing date on the day of the date hereof, as fully to all intents and purposes as though set forth at length therein, and is as follows :—

It is mutually agreed that all interest charges to be paid during the construction of any specified line shall be paid for from the proceeds of the loan.

It is mutually agreed that there shall be paid no eight (8) per centum or five (5) per centum commissions upon the interest payments paid for out of the proceeds of the loan during the time of construction or at any other time.

It is mutually agreed that there shall be no commission charged upon the money expended for the purchase of land.

It is mutually agreed that inspection fees and incidental expenses connected with purchases which are not made upon the condition that such purchase shall be subject to inspection upon delivery in China shall be borne by Siems and Carey.

It is further agreed that in time of war in China said railroads and all employees thereof shall be subject to the rules of martial law, and that said railroads shall receive half rates for the transportation of troops, munitions of war, and all commissaries for war purposes.

It is further agreed that the railroads shall transport Government troops at half rates during times of peace or war.

IN WITNESS WHEREOF, the Republic of China has caused this instrument to be signed and executed by its Minister of Communications acting by its authority and in its behalf, this 17th day of the fifth month of the fifth year of the Republic of China, being the 17th day of May, 1916.

Signed :

REPUBLIC OF CHINA,
By TSAO JU-LIN,
Its Minister of Communications.

SIEMS AND CAREY,
By W. F. CAREY.

ROY. S. ANDERSON.

COPY.

SIEMS-CAREY COMPANY, LTD.
Peking, May 17th, 1916.

To HIS EXCELLENCY,
Honorable Tsao Ju-lin,
Ministry of Communications of the Republic of China, Peking.

YOUR EXCELLENCY,—As a result of our negotiations respecting the matters embraced herein, we have the honor to submit to Your Excellency as the official representative of the Republic of China and for your formal acceptance in behalf of said Republic, the following proposition all of which has heretofore been verbally agreed upon between us, namely :—

Clauses 1 to 13 inclusive are identical with similar clauses in the first letter of this series from the Minister of Communications to Messrs. Siems and Carey.

14.—The provisions hereof shall extend and apply to the said Republic, its successors and assignees, and to the undersigned and to their, and each of their, heirs, executors, administrators and assignees.

15.—This proposition shall become effective and binding upon the respective parties hereto upon acceptance hereof in writing by said Republic acting by and through its proper Ministry.

16.—And it is further agreed that in the event that the parties hereto shall mutually decide that further details are required to more fully and truly express the true intents and purpose hereof, this Agreement shall be reformed to include the same.

Respectfully,

SIEMS AND CAREY,
By W. F. CAREY.

(Sgd.) ROY S. ANDERSON.

Amendment to Compensation Proposal.

SIEMS-CAREY COMPANY, LTD.
Peking, May 17, 1916.

To HIS EXCELLENCY,
Honorable Tsao Ju-lin,
Ministry of Communications of the Republic of China, Peking.

YOUR EXCELLENCY,—As a supplement to be considered and construed to be a part of our proposition to the Republic of China, respecting the building of steam railroads in said Republic, bearing date on the day of the date hereof, as fully to all intents and purposes as though set forth at length therein, we have the honor to herewith submit the following as an amendment to paragraph numbered six (6) of said proposition relating to compensation, namely :—

In addition to the payment to us by said Republic of a sum equal to five (5) per centum of the aggregate amount of all purchases made in behalf of said railroads (excepting purchases of land for any purpose) in said proposition stipulated for our services therein mentioned, said Republic shall also pay to us a sum equal to eight (8) per centum of the aggregate amount of all other moneys expended for the construction of all of said railroads. As soon as any section thereof shall have been fully completed and put into commercial operation, then said eight (8) per centum payments shall cease upon such completed sections that are being commercially operated. Settlements and payments for both the five (5) per centum and the eight (8) per centum aforesaid, to be made at the end of each six (6)) months from the date of the beginning of said work. And further, for handling and selling said bonds as in said proposition provided, as well as for the said services by us to be performed, twenty-five (25) per

centum of the net profits derived from operating said railways, after paying all maintenance, operating and bond charges, shall be paid yearly to the undersigned at the end of each fiscal year up to the time of the payment of the last of said bonds, when all rights of the undersigned shall cease and this contract shall terminate. By the term "bond charges" as above used, is meant the semi-annual interest on each issue of bonds during the first twenty-five (25) years from and after their date (during which time no payments of principal shall be made) and the semi-annual interest and four (4) per centum of the principal of each said issue to be paid in each and every year of the last twenty-five (25) years of the period for which said bonds are to run.

It is further understood that before any division of net profits shall be made in any year as herein provided, there shall be reserved and set aside out of the said annual net profits, a sum equal to five (5) per centum of said annual net profits for a replacement fund, and a separate fund shall always be maintained for that purpose; it is understood, however, that if at any time said replacement fund shall have accumulated a sum in excess of the actual and reasonable requirements of said fund, such excess, by our mutual consent, shall be divided between us, you to receive twenty-five (25) per centum thereof as above provided.

It is further agreed that no commissions whatsoever shall be paid to you upon the salaries of any officer mentioned in this Agreement.

Respectfully yours,

(Sgd.) By W. F. CAREY.
SIEMS AND CAREY,

(Sgd.) ROY. S. ANDERSON.

Supplementary Agreement Reducing Mileage and Operation Profits.

THIS SUPPLEMENTARY AGREEMENT is made according to Article Seventeen (17) of the original Agreement, signed May 17th, 1916, between the Government of the Republic of China, represented by its Minister of Communications, and Siems and Carey, represented by Mr. William F. Carey, and it is hereby agreed as follows :—

FIRST.

Article One (1) of said agreement which provides that fifteen hundred (1,500) miles of railway be constructed shall be amended so that wherever said mileage appears as fifteen hundred (1,500) miles, it shall be eleven hundred (1,100) miles.

SECOND.

In the second article of the supplement to said agreement addressed to the Minister of Communications of the Republic of China dated May 17th, 1916, and also in any other part of said agreement of its supplement where the per centum of the net profits derived from operation of said railways to be paid for handling bonds is fixed at twenty-five (25) per centum, the same shall be amended and reduced to twenty (20) per centum.

THIRD.

The first paragraph of Article Four (4) of the original agreement, shall be modified and reformed to read as follows :—

"So soon as the Government of the Republic of China and Siems and Carey, or their assigns, shall have determined any line that shall be first constructed, estimates of the cost of constructing and equipping such line shall be agreed upon between them and the Government, and gold bonds of the amounts required by such estimates shall be issued. As soon as the authority to issue such bonds is given by the Government of the Republic of China, Siems and Carey, or other appointees or assigns, on behalf of and as agents for the Government of the Republic of China in this matter, shall issue such bonds as hereinafter provided, such issue to be either *en bloc* or in series as may be mutually agreed upon.

The same procedure shall be likewise followed as to the issuance of bonds to provide funds for the construction of all other lines which it shall be mutually determined to build. The Government of the Republic of China and Siems and Carey, or their appointees or assigns, as its agent, will at the time of the first issue and of every other issue, enter into such necessary further and supplementary stipulations and agreements regarding the character and issuance of such bonds and also the deposit and transfer of the loan proceeds as the exigencies of the financial situation may at the time require for the proper economical and successful flotation of the bonds.

Such bonds or other obligations hereinafter provided for shall be issued at such time, and in such amounts as will insure the continuous economical construction of the railways until the same are completed."

FOURTH.

To the Article numbered Five (5) of the original agreement shall be added the following amendments :

"The bonds provided for in Article numbered Four (4) hereof shall be issued by Siems and Carey, or their appointees or assigns, for and in behalf of, and as agent for the Government of the Republic of China at a price to be fixed by said agent upon consultation with the duly authorized representative of the Republic of China, and said Siems and Carey shall use their best efforts to have said bonds sold for the highest possible price.

When the construction and equipment of a line of railroad has been determined upon, and the estimates covering such construction and equipment have been agreed to as hereinbefore provided, said agent in consultation with the duly authorized representative of the Government of the Republic of China, shall decide what is the most favorable moment for the issue of the bonds, and the duly authorized representative of the Government of the Republic of China shall give the necessary instructions to the Chinese Minister in Washington. If at such time so determined the issue of such bonds on the terms named herein or agreed upon would be impossible, then in such case the Government of the Republic of China and said agent shall agree upon a mutually satisfactory plan of temporary financing through the issue of Chinese Government 5-year Treasury bills at the rate of interest and discount to be agreed upon. Such notes shall be repaid from the proceeds of the sale of bonds to be issued, when conditions for the sale of Chinese long-term obligations shall have sufficiently improved, such long-term obligation to be issued under an agreement to be negotiated at the time.

If, however, subsequent to an agreement having been reached, it issue bonds hereunder before the publication of the prospectus for such issue, or of any series thereof, any political or financial crisis should arise affecting the money markets or the prices of Chinese Government securities so as to render impossible, in the opinion of the agent, the successful issue of the bonds at the time upon, then the said agent upon consultation with the Chinese Government respecting the period of time, shall be granted a reasonable extension for the performance of its contract. If within the time limit to be arranged, the issue of Chinese bonds on the conditions herebefore set forth should be impossible, then the Government of the Republic of China and its said agent, shall agree on a mutually satisfactory plan for temporary financing to provide as far as possible for the uninterrupted continuance of construction.

FIFTH.

After the first paragraph of Article numbered Eight (8) of the original agreement the following paragraph shall be inserted :

"Of the three (3) officers, the Engineer-in-Chief shall be appointed immediately, the Auditor as soon as required, and the Traffic Manager when required for operation. Their terms of office shall be during the life of the loans. With regard to the employment of all other officers, the number of them, the scale of their salaries, and the method of appointment, the Director-General or Managing-Director shall in consultation and mutual agreement with said three Heads of Department respectively decide upon a plan. Which plan shall be followed.

The Director-General or Managing-Director shall reserve the right to employ his own office staff."

SIXTH.

The Government of the Republic of China undertakes during the life of the bonds to be issued hereunder to treat the railways contemplated under this agreement in the same spirit of fairness in which all other Chinese Government Railways are treated.

SEVENTH.

All bonds and coupons and all payments made and received in connection with the service of any and all bonds issued hereunder, shall be exempt from all Chinese taxes and imposts of whatsoever nature during the life of said bonds or of any of them.

EIGHTH.

All of the uniform laws, by-laws, rules and regulations applicable to all Government railways in China promulgated by the Ministry of Communications, shall be observed by the railways built under this agreement.

NINTH.

The rights and duties of the Government of the Republic of China and of Siems & Carey, their appointees or assigns, shall be effective upon the day on which the agreement and all supplementary agreements are contracted and until complete redemption of all bonds.

TENTH.

After any line of railway has been agreed upon the survey thereof will be immediately made. All necessary expenses hereof will be paid out of the advancement already made. If after the survey is completed neither the bonds can be issued hereunder, nor funds for temporary financing according to this Supplental Agreement are available within one (1) year, the contract may be cancelled. In that event said advancement shall be repaid with interest stipulated, unpaid up to that time, by the Government of the Republic of China, before cancellation thereof.

SIGNED AND SEALED at Peking by the contracting parties this twenty-ninth day of the ninth month of the fifth year of the Republic of China, being the twenty-ninth day of September, 1916, Western Calender.

THE GOVERNMENT OF THE REPUBLIC OF CHINA,

BY HSU SHIH-YING,
Its Minister of Communications.

SIEMS AND CAREY,
One of the Partners.

ROY S. ANDERSON.

By WILLIAM F. CAREY (Seal),

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

German Interests in Chinese Railways.—The Ministry of Communications has informed the Legations that the privileges of Germans in connection with the Hukuang Railway Loan Agreement were cancelled on the declaration of war. The payment of principal and interest on German bonds and advances ceased and they will be reckoned as security for the indemnity due to China for losses owing to the war. It is hoped that Great Britain, France and America will cooperate to the utmost of their ability to build the Hukuang lines.

It must be stipulated, however, that operations be limited to Great Britain, France and America and that German interests must not be revived after the conclusion of peace.

Proposals for Construction of Canton Tramways.—The Canton Municipal Council has made two proposals for the construction of tramways. Under the first proposal the tramway company must pay the Council a gratuity of two million dollars and give the Council five hundred thousand dollars in shares. In return for this the Council will give the privilege of operating the tramways for twenty years, and will agree to buy over the system at the end of that time on terms mutually agreed upon, or in case of the Government's failure to redeem the plant the company would pay a percentage of its net profit to the government until redemption. Under the second proposal each of the parties would take half of the shares, the company would make a loan to the Council equivalent to half the shares, at 4 per cent. interest, and the company would pay a gratuity of a million dollars and a further loan of a million dollars at an agreed rate of interest. Under both proposals fares would be mutually agreed upon by the two parties.

New Locomotives for S.M.R.—The South Manchuria Railway recently put into service 17 Mikado type locomotives imported from America. In May eight more locomotives of the same type will arrive. A shipment of 26 more is expected in August, and in October six locomotives of the Pacific type, for passenger service, are looked for. At the same time four locomotives of the Consolidation type are under way at the railway's workshops at Shahokou.

Big Electric Car System.—Some Yokohama business men are promoting a scheme for building an electric railway line, apart from the already existing ones, to start from somewhere in Nihombashi-ku, Tokyo, and run underground along the outer moat, through Toranomon, out to Tengenji and Shibuya, where the line will come on the surface, cross the Rokugo River at the historical Yaguchi No Watashi, and continue to Yokohama to connect with the Yokohama city lines. The promoters are now trying to get the directors of the Yokohama electric car company interested in the scheme. This line is expected to parallel the Musashi Electric Railway, proposed by Mr. Jiyemu Okada, some years ago, so that the two interests may be amalgamated in order to hasten the work. The promoters' idea is that the Yokohama city lines shall be made intermediary lines to connect the Tokyo-Yokohama line and the Shonan line, another proposed line to cover the peninsula of Sagami. The three lines, thus connected, will, it is expected, connect Tokyo, Yokohama and Yokosuka, and form a big railway system. The capital proposed is to be Y.20,000,000.

S.M.R. Co.'s Estimates for 1919.—The S.M.R. Co.'s Estimates for the current fiscal year of 1919 have already been passed by the Colonial Board and the Department of Finance and are now awaiting the Premier's sanction, which is expected in a day or so. At the same time, the call of Y.6,000,000 on the Second Issue of the Company's 400,000 shares on June 1st next and also of Y.4,000,000 of the Third Issue of the Company's 200,000 shares has been sanctioned. As to the Company's debentures, negotiations will be held with the Department of Finance since the matter will naturally affect the Government loans to be issued in Japan. The aggregate amount of the Company's Estimates for the current fiscal year is more than Y.69,000,000, including Y.30,000,000 for the railways (of which Y.20,000,000 is for the construction of 1,000 goods cars, 40 locomotives, and dozens of passenger cars, and Y.1,200,000 is for the double-tracking of a section north of Mukden), Y.17,000,000 for the Anshan Steel Works, Y.420,000 for the Third Wharf, Dairen, now in course of construction, Y.700,000, half the cost of reconstructing the quay wall of Dairen Harbor, etc.

Tokyo Tramways.—Receipts in March were Y.14,540,371, as compared with Y.12,807,549 in March of last year and Y.10,738,358 in the same month of 1917.

Japanese Railway Receipts.—The total receipts of the Railway Board of Japan during the fiscal year 1918 ending in March last amounted to Y.121,898,153 from passengers and Y.107,369,255 from freights making a total of Y.229,267,408. These figures represent an increase of Y.35,894,806 in the income from passenger and of Y.20,531,408 in that from freights.

S.-N. Railway Plans Improvements.—Contemplated improvements on the Shanghai-Nanking Railway would involve an expenditure of something like a million dollars, about half of which would be available from net profits of the line while the rest would be raised by an issue of debentures. The line has been handicapped by the lack of freight cars, and also by the ferry system between Pukow and Nanking, and improvements would undoubtedly begin on these two difficulties.

Shanghai Tramways.—The effective receipts of the Shanghai Tramways in March amounted to Mex. $123,847.08 as against $105,787.13 in March, 1918. Recently weekly figures were as follows :

Week Ending :	Effective Receipts.	Passengers Carried.
April 2	$28,872.29	1,745,370
April 9	29,893.82	1,803,391
April 16	28,862.02	1,725,810
April 23	27,892.57	1,688,117

MINING

Sungei Gau Tin Mining Co.—The 1918 workings resulted in a profit of Straits $42,632, to which a balance brought forward added Straits $1,703, an interim dividend of 10 per cent. absorbing Straits $15,000, leaving Straits $29,336. A final dividend of 10 per cent., making the total dividend 20 per cent., has been declared, leaving Straits $14,336 to be carried over. The total output amounted to 1,747 piculs, of which 1,375 piculs were obtained from the battery and 372 piculs from tributors, the total being less than that of the preceding year by 911 piculs. The average price obtained for ore during the year amounted to Straits $85.22 compared to Straits $62.50 in the preceding year.

Chinese Invents New Processes.—Chung Yu Wang, of Hankow, has applied for a patent on an invention the object of which is to produce a slag which does not contain any antimony compound. Another object is to utilize a by-product of the refining of antimony, which is at present discarded as useless. The mixture is composed of iron sulphide resulting from the precipitation process of antimony smelting, and an alkali metal carbonate.

Kiangsi Iron Mines.—The news that the Ministry of Agriculture and Commerce has granted permission to a Chinese syndicate for the operation of the Chengmenshan iron mines at Kiukiang, Kiangsi Province, has aroused a storm of protest from the provincial assembly, as it is suspected that the syndicate is capitalized with Japanese funds.

Seoul Mining Company.—During the month of March, the mills on the Suan Concession treated a total of 18,200 tons of ore for a gross production of Y.177,343.02. The Suan mill was again in full operation on Suan ore and will continue so through the summer.

Kailan Mining Administration.—Recent weekly records of production and sales of the Administration's mines have been as follows :

Week Ending :	Output : (tons)	Sales : (tons)
March 22	73,880	71,756
March 29	78,414	51,045
April 5	77,320	71,518
April 12	76,832	60,935

INDUSTRIES

Needle Factory for Shanghai.—A Chinese business man, Mr. Koo Tseng-hui, formerly of Osaka, has established a factory known as the Hua Fung Needle Company on Ward Road, Shanghai, for the manufacture of sewing needles. The needle business in China was formerly in the hands of German traders, passed over to Japan with the war, and is now being divided among other countries.

Waterworks for Wuchow.—A waterworks company is being organized at Wuchow, Kwangsi Province, with a capital of $300,000. The company will be controlled by the local government.

大正七年七月十日第三種郵便物認可

THE FAR EASTERN REVIEW

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Vol. XV | JUNE, 1919 | No. 6

SHANGHAI, PEKING, TOKYO AND MANILA

上海仁記路第五號

遠東時報

The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XV SHANGHAI, JUNE, 1919 No. 6

Dr. Sun Yat-sen's Program for the International Development of China

The Ex-President Outlines his Project for a New Port; a Great Railway System; the Colonization of Mongolia and Sinkiang; the Construction of Canals, and the Development of Iron and Coal Fields.

The industrial development of China should be carried out along two lines: (1) by private enterprise and (2) by national undertaking. All matters that can be and are better carried out by private enterprise should be left to private hands which should be encouraged and fully protected by liberal laws. In order to facilitate industrial development by private enterprise in China, the hitherto suicidal internal taxes must be abolished, the cumbersome currency must be reformed, the various kinds of official obstacles must be removed, and transportation facilities must be provided. All matters that cannot be taken up by private concerns and those that possess a monopolistic character should be taken up as national undertakings. It is this latter line of development that we are here endeavoring to deal with. In this national undertaking, foreign capital has to be invited, foreign experts and organizers have to be enlisted, and gigantic methods have to be adopted. The property thus created will be state owned and will be managed for the benefit of the whole nation. During the construction and the operation of each of these national undertakings, before its capital and interest are fully repaid, it will be managed and supervised by foreign experts under Chinese employment. As one of their obligations, these foreign experts have to undertake the training of Chinese assistants to take their places in the future. When the capital and interest of each undertaking are paid off, the Chinese Government will have the option to employ either foreigners or Chinese to manage the concern as it thinks fit.

Before entering into the details of this International development scheme, four principles have to be considered:—

(1) The most remunerative field must be selected in order to attract foreign capital.
(2) The most urgent needs of the nation must be met.
(3) The lines of least resistance must be followed.
(4) The most suitable positions must be chosen.

In conformity with the above principles, I formulate Program I as follows:—

I. The construction of a great Northern Port on the Gulf of Pechili.
II. The building of a system of railways from the Great Northern Port to the Northwestern extremity of China.
III. The Colonization of Mongolia and Sinkiang (Chinese Turkestan).
IV. The construction of canals to connect the inland waterway systems of North and Central China with the Great Northern Port.
V. The development of the Iron and Coal fields in Shansi and the construction of an Iron and Steel Works.

These five projects will be worked out as one program, for each of them will assist and accelerate the development of the others. The Great Northern Port will serve as a base of operation of this International Development Scheme, as well as a connecting link of transportation and communication between China and the outer world. The other four projects will be centred around it.

PROGRAM I.—PART I.

The Great Northern Port

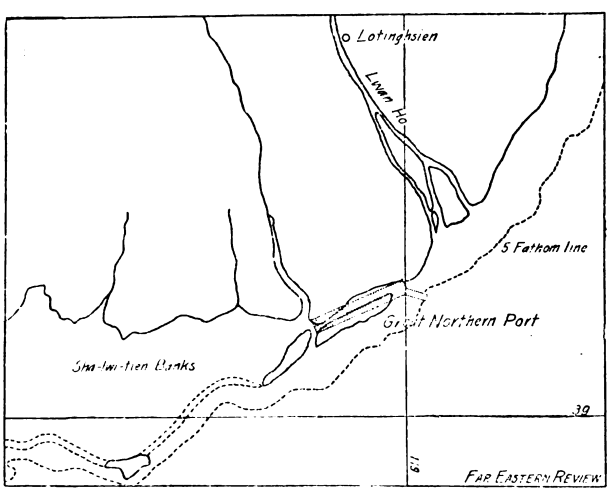
I propose that a great deep water and ice free Harbor be constructed on the Gulf of Pechili. The need of such a port in that part of China has been keenly felt for a long time. Several projects have been proposed such as the deepening of the Taku Bar, the construction of a harbor in the Chiho estuary, the Chinwangtao Harbor which has actually been carried out on a small scale and the Hulutao Harbor which has been partially constructed. But the site of my projected Harbor is in none of these places for the first two are too far from the deep water line and too near to fresh water which freezes in winter. So it is impossible to make them deep water and ice free ports, while the last two are too far away from the centre of population and are unprofitable as commercial ports. The locality of my projected port is just midway between Taku and Chinwangtao and at a point between the mouths of the Tsingho and Lwanho, on the cape of the coast line between Taku and Chinwangtao. This is one of the points nearest to deep water in this Gulf. With the fresh water of the Tsingho and Lwanho diverted away, it can be made a deep water and ice free port without much difficulty. Its distance to Tientsin is about seventy or eighty miles less than that of Chinwangtao to Tientsin. Moreover, this port can be connected with the inland waterway systems of North and Central China by canal, whereas in the case of Chinwangtao and Hulutao this could not be done. So this port is far superior as a commercial harbor than Hulutao or Chinwangtao which at present is the only ice free port in the Gulf of Pechili.

From a commercial standpoint this port will be a paying concern from the very beginning of its construction, owing to the fact that it is situated at the centre of the greatest salt industry in China. The cheapest salt is produced here by sun evaporation only. If modern methods could be added, also utilizing the cheap coal near by, the production could increase many times more and the cost could thus be made much cheaper. Then it can supply the whole of China with much cheaper salt. By this industry alone it is quite sufficient to support a moderate sized harbor which must be the first step of this great project. Besides, there is in the immediate neighborhood the greatest coal mine that has yet been developed in China, the Kailan Mining Co. The output of its colliery is about four million tons a year. At present the

company uses its own harbor, Chinwangtao, for shipping its exports. But our projected Harbor is much nearer to its colliery than Chinwangtao. It can be connected with the mine by canal thus providing it with a much cheaper carriage than by rail to Chinwangtao. Furthermore, our projected port will in future consume much of the Kailan coal. Thus eventually the Company must use our port as a shipping stage for its exports. Tientsin, the largest commercial centre in North China, has no deep harbor and is ice bound several months a year in winter, and so has to use our projected port entirely as an outlet for its world trade. This is the local need only but for this alone it is quite sufficient to make our projected port a paying concern.

But my idea is to develop this port as large as New York in a reasonable limit of time. Now, let us survey the hinterland to see whether the possibility justifies my ideal or not. To the southwest are the provinces of Chili and Shansi, and the Hoangho valley with a population of nearly a hundred millions. To the northwest are the undeveloped Jehol district and the vast Mongolian prairie with their virgin soil waiting for development. Chili with its dense population and Shansi with its rich mineral resources have to depend upon this port as their only outlet to the sea. And if the future Dolon Nor and Urga Railway is completed with connection to the Siberian line then Central Siberia will also have to use this as its nearest sea-port. Thus its contributing or rather distributing area will be larger than that of New York. Finally, this port will become the true terminus of the future Eurasian Railway System, which will connect the two continents together. The land which we select to be the site of our projected port is now almost worth next to nothing. Let us say two or three hundred square miles be taken up as national property absolutely for our future city building. If within forty years we could develop a city as large as Philadelphia, not to say New York, the land value alone will be sufficient to pay off the capital invested in its development.

The need of such a port in this part of China goes without saying. For the provinces of Chili, Shansi, Western Shantung, Northern Honan, a part of Fengtien and the greater part of Shensi and Kansu with a population of about 100 millions are lacking of a sea port of this kind. Mongolia and Sinkiang as well as the rich coal and iron fields of Shansi will also have to depend on the Chili coast as their only outlet to the sea. And the millions of congested population of the coast and the Yangtze valley need an entrance to the virgin soil of the Mongolian prairie and the Tienshan valley. The port will be the shortest doorway and the cheapest passage to these regions.



MAP 1—PLAN OF PROPOSED NEW PORT

The locality of our projected port is nearest to deep water line, and far away from any large river which might carry silt to fill up the approach of the harbor like those of the Hoangho entrance and the Yangtze estuary which cause great trouble to conservancy work. So it has no great natural obstacle to be overcome. Moreover, it is situated in an arid plain with few people living on it, so it has no artificial hindrance to be overcome. We can do whatever we please in the process of construction.

As regards the planning and estimation of the work of the harbor construction and city building, I must leave them to experts who have to make extensive surveys and soundings before detailed plan and proper estimation could be made. Whereas for rough reference see Map I.

PROGRAM I.—PART II.

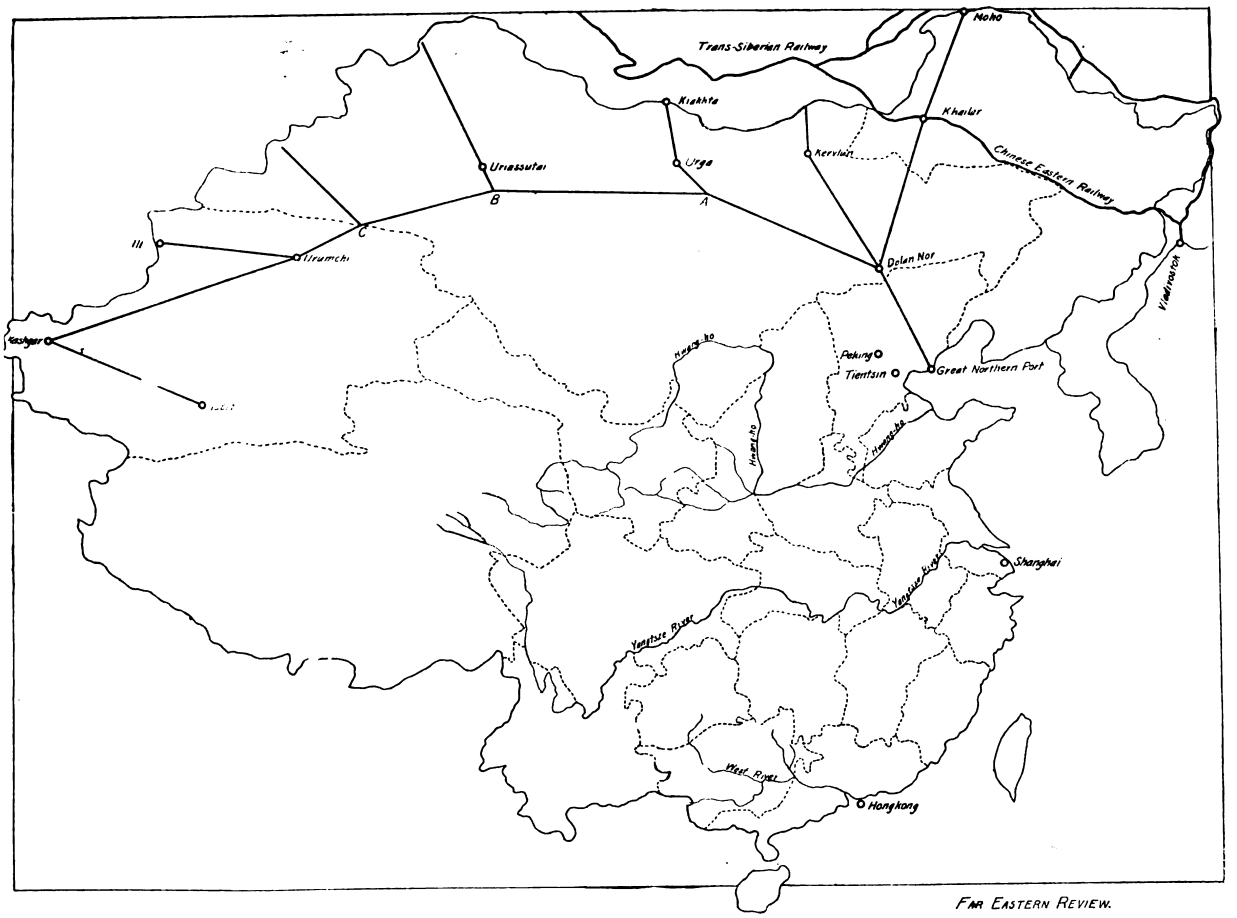
The Northwestern Railway System

Our projected Railway will start at the Great Northern Port and follow the Lwan Valley to the prairie city of Dolon Nor, a distance of three hundred miles. This railway should be built with double tracks at the commencement. As our projected Port is a starting point to the sea, so Dolon Nor is a gate to the vast prairie which our projected Railway System is going to tap. It is from Dolon Nor our Northwestern Railway System is going to radiate. First, a line N. N. E. will run parallel to the Hsingan Range to Khailar, and thence to Moho, the gold district on the right bank of the Amur River. This line is about eight hundred miles in length. Second, a line N.N.W. to Kurelun, and thence to the frontier to join the Siberian line near Chita. This line has a distance of about six hundred miles. Third, a trunk line northwest, west, and southwest, skirting off the northern edge of the desert proper, to Urumuchi at the western end of China, a distance of about one thousand six hundred miles all on level land. Fourth, a line from Urumuchi westward to Ili, a distance of about four hundred miles. Fifth, a line from Urumuchi southwest across the Tienshan gap into the Darim basin, then turning southwest running along the fertile zone between the southern watershed of the Tienshan and the northern edge of the Darim Desert, to Kashgar, and thence turning southeast to another fertile zone between the eastern watershed of the Pamir, the northern watershed of the Kuenlun Mountain and the southern edge of the Darim Desert, to the city of Iden or Keria, a distance of about one thousand two hundred miles all on level land. Sixth, a branch from the Dolon Nor Urumuchi Trunk Line, which I shall call Junction A, to Urga and thence to the frontier city Kiakhta, a distance of about three hundred and fifty miles. Seventh, a branch from Junction B to Uliassutai and beyond N.N.W. up to the frontier, a distance of about six hundred miles. And eighth, a branch from Junction C northwest to the frontier, a distance of about four hundred and fifty miles. See Map 2.

Regarded from the principle of "following the line of least resistance" our projected railway in this program is the most ideal one. For most of the seven thousand miles of lines under this project are on perfectly level land. For instance, the Trunk Line from Dolon Nor to Kashgar and beyond, about a distance of three thousand miles right along is on the most fertile plain and encounters no natural obstacles, neither high mountains nor great rivers.

Regarded from the principle of "the most suitable position," our projected railways will command the most dominating position of world importance. It will form a part of the trunk line of the Eurasian system which will connect the two populous centres, Europe and China, together. It will be the shortest line from the Pacific Coast to Europe. Its branch from Ili will connect the future Indo-European line, and through Bagdad, Damascus and Cairo will link up also with the future African system. Then there will be a through route from our projected port to Capetown. There is no existing railway commanding such a world important position as this.

Regarded from the principle of the "most urgent need of the Nation," this railway system becomes the first in importance, for the territories traversed by it are larger than the eighteen provinces of China Proper. Owing to the lack of means of transportation and communication at present these rich territories are left undeveloped and millions of laborers in the congested provinces along the Coast and in the Yangtse valley are without work. What a great waste of natural and human energies. If there is a railway connecting these vast territories, the waste



MAP 2—PROPOSED RAILWAY IN COLONIZATION AREA

labor of the congested provinces can go and develop these rich soils for the good not only of China but also of the whole commercial world. So a system of railways to the northwestern part of the country is the most urgent need both politically and economically for China to-day.

I have intentionally left out the first principle—"the most remunerative field must be selected"—not because I want to neglect it but because I mean to call more attention to it and treat it more fully. It is commonly known to financiers and railway men that a railway in a densely populated country from end to end is the best paying concern, and a railway in a thinly-settled country from end to end is the least paying one. And a railway in an almost unpopulated country like our projected lines will take a long time to be made a paying concern. That is why the United States Government had to grant large tracts of public lands to railway corporations to induce them to build the Transcontinental lines to the Pacific Coast, half a century ago. Whenever I talked with foreign railway men and financiers about the construction of railways to Mongolia and Sinkiang, they generally got very shy of the proposition. Undoubtedly they thought that it is for political and military reasons only that such a line as the Siberian Railway was built, which traversed through a thinly populated land. But they could not grasp the fact which might be entirely new to them, that a railway between a densely populated country and a sparsely settled country will pay far better than one that runs from end to end in a densely populated land. The reason is that in economic conditions, the two ends of a well populated country are not so different as that between a thickly populated country and a newly opened country. At the two ends of a well populated country, in many respects, the local people are self-supplying, excepting a few special articles which they depend upon the other end of the road to supply. So the demand and supply between the two places are not very great, thus the trade between the two ends of the railway could not be very lucrative, while the difference of the economic condition between a well populated country and an unpopulated country is very great. The workers of the new land have to depend upon the supplies of the thickly populated country almost in everything excepting foodstuffs and raw materials which they have in abundance and for disposal of which they have to depend upon the demand of the well populated district. Thus the trade between the two ends of the line will be extraordinarily great. Furthermore, a railway in a thickly populated place will not affect much the masses which consist of the majority of the population. It is only the few well-to-do and the merchants and tradesmen that make use of it. While with a railway between a thickly populated country and a sparsely settled or unsettled country, as soon as it is opened to traffic for each mile, the masses of the congested country will use it and rush into the new land in a wholesale manner. Thus the railway will be employed to its utmost capacity in passenger traffic from the beginning. The comparison between the Peking-Hankow Railway and the Peking-Mukden Railway in China is a convincing proof.

The Peking-Hankow Railway is a line of over eight hundred miles running from the capital of the country to the commercial centre in the heart of China right along in an extraordinarily densely settled country from end to end, while the Peking-Mukden line is barely six hundred miles in length running from a thickly populated country to thinly populated Manchuria. The former is a well paying line but the latter pays far better. The net profit of the shorter Peking-Mukden line is sometimes three to four millions more yearly than that of the longer Peking-Hankow line.

Therefore, it is logically clear that a railway in a thickly populated country is much better than one that is in a thinly populated country in remuneration. But a railway between a very thickly populated and a very thinly populated or unpopulated country is the best paying concern. This is a law in railway economics which hitherto had not been discovered by railway men and financiers.

According to this new railway economic law, our projected railway will be the best remunerative project of its kind. For at the one end, we have our projected port which acts as a connecting link with the thickly populated coast of China and the Yangtse valley and also the two existing lines, the Kinghan and the Tsinpu, as feeders to the projected port and Dolon Nor line. And at the other end, we have a vast and rich territory, larger than China Proper, to be developed. There is no such vast fertile field so near to a centre of a population of four hundred millions to be found in any other part of the world.

PROGRAM I.—PART III.

The Colonization of Mongolia and Sinkiang

The colonization of Mongolia and Sinkiang is a complement of the railway scheme. Each is dependent upon the other for its prosperity. The colonization scheme, besides benefitting the railway, is in itself a greatly profitable undertaking. The results of the United States, Canada, Australia, and Argentina are ample proofs of this. In the case of our project, it is simply a matter of applying waste Chinese labor and foreign machinery to a fertile land for production for which its remuneration is sure. The present colonization of Manchuria, notwithstanding its topsy-turvy way which caused great waste of land and human energy, has been wonderfully prosperous. If we would adopt scientific methods in our colonization project we could certainly obtain better results than all the others. Therefore, I propose that the whole movement be directed in a systematic way by state organization with the help of foreign experts and war organizers for the good of the colonists particularly and the nation generally.

The land should be bought up by the State in order to prevent the speculators from creating the dog-in-the-manger system, to the detriment of the public. The land should be prepared and divided into farmsteads, then leased to colonists on perpetual term. The initial capital, seeds, implements and houses should be furnished by the state at cost price for cash or on the instalment plan. For these services, big organizations should be formed and war work measures should be adopted in order to transport, to feed, to clothe and to house every colonist on credit in his first year.

As soon as a sufficient number of colonists is settled in a district, franchise should be given for self-government and the colonists should be trained to manage their own local affairs with perfect democratic spirit.

If within ten years we can transport, let us say, ten millions of the people from the congested provinces of China to the Northwestern territory to develop its natural resources, the benefit to the commercial world at large will be enormous. No matter how big a capital that shall have been invested in the project it could be repaid within a very short time. So in regard to its bearing to "the principle of remuneration" there is no question about it.

Regarded from "the principle of the need of the Nation" colonization is the most urgent need of the first magnitude. At present China has more than a million soldiers to be disbanded. Besides, the dense population will need elbow room to move in. This colonization project is the best thing for both purposes. The soldiers have to be disbanded at great expense and a hundred millions of dollars may be needed for disbandment alone, in paying them off with a few months pay. If nothing more can be done for these soldiers' welfare, they will either be left to starve or to rob for a living. Then the consequences will be unimaginable. This calamity must be prevented and prevented effectively. The best way for this is the colonization scheme. I hope that the friendly foreign financiers, who have the welfare of China at heart, when requested to float a reorganization loan for the Chinese Government in the future, will persist on the point—that the money furnished must first be used to carry out the colonization scheme for the disbanded soldiers. Otherwise, their money will only work disasters to China.

For the million or more of the soldiers to be disbanded, the district between our projected port and Dolon Nor is quite enough to accommodate them. This district is quite rich in mineral resources and is very sparsely settled. If a railway is to start at once from the projected port to Dolon Nor these soldiers could be utilized as a pioneer party for the work of the port, of the railway, of the developing of the adjacent land beyond the Great Wall, and of preparing Dolon Nor as a jumping-off ground for further colonization development of the great northern plain.

PROGRAM I.—PART IV.

The Construction of Canals to Connect the Inland Waterway Systems of North and Central China with Great Northern Port.

This scheme will include the regulation of the Hoangho and its branches, the Weiho in Shensi, and the Fenho in Shansi and connecting canals. The Hoangho should be deepened at its mouth in order to give a good drawing to clear its bed of silt and carry the same to the sea. For this purpose, jetties should be built far out to the deep sea, as those at the mouths of the Mississippi in America. Its embankments should be parallel in order to make the width of the channel equal right along, so as to give equal velocity to the current which will prevent the deposit of silt at the bottom. By dams and locks it could be made navigable right up to Lanchow, in the province of Kansu, and at the same time water power could be developed. The Weiho and the Fenho can also be treated in the same manner so as to make them navigable to a great extent in the provinces of Shensi and Shansi. Thus the provinces of Kansu, Shensi, and Shansi can be connected by waterway with our projected port on the Gulf of Pechili, so that cheap carriage can be provided for the rich mineral and other products from these three hitherto secluded provinces.

The expenses of regulating the Hoangho may be very great. As a paying project it may not be very attractive but as a flood preventive measure it is the most important task to the whole nation. This river has been known as "China's Sorrow" for thousands of years. By its occasional overflow and bursting of its embankments, millions of lives and billions of money have been destroyed. It is a constant source of anxiety in the minds of all China's statesmen from time immemorial. A permanent safe-guard must be effected, once for all, despite the expenses that will be incurred. The whole nation must bear the burden of its expenses. To deepen its mouth, to regulate its embankments and to build extra dykes are only but half of the work to prevent flood. The entire reforestation of its watershed to prevent the washing off of loess is another half of the work in the prevention of flood.

The Grand Canal, the former great waterway of China between the North and the South for centuries, and now being reconstructed in certain sections, should be wholly reconstructed from end to end, in order to restore the inland waterway traffic from the Yangtse valley to the North. The reconstruction of this canal will be a great remunerative concern for it runs right along from Tientsin to Hangchow in an extremely rich and populous country.

Another new canal should be constructed from our projected port to Tientsin to link up all the inland waterway systems to the new port. This new canal should be built extra wide and deep, let us say, similar to the present size of the Peiho, for the use of the coasting and shallow vessels which the Peiho now accommodates for other than the winter seasons. The banks of this canal should be prepared for factory sites so as to enable it to pay not only by its traffic but also from the land on both sides of its banks.

As for planning and estimating these river and canal works, the assistance of technical experts must be solicited.

PROGRAM I.—PART V.

The Development of the Iron and Coal Fields in Chihli and Shansi, and the Construction of Iron and Steel Works

Since we have in hand in this program the work of the construction of the Great Northern Port, the work of the building of a system of railways from the Great Northern Port to the North Western Extremity of China, the work of the Colonization of Mongolia and Sinkiang, and the work of the construction of canals and improvement of rivers to connect with the Great Northern Port, the demand for materials will be very great. As the iron and coal resources of every industrial country are decreasing rapidly every year, and as all of them are contemplating the conservation of their natural resources for the use of future generations, if all the materials for the great development of China were to be drawn from them, the draining of the natural resources of those countries will be detrimental to their future generations. Besides, the present need of the *post-bellum* reconstruction of Europe has already absorbed all the iron and coal that the industrial world could supply. Therefore, new resources must be opened up to meet the extraordinary demand of the development of China.

The unlimited iron and coal fields of Shansi and Chihli should be developed on a large scale. Let us say a capital of from five hundred to a thousand million dollars Mex. should be invested in this project. For as soon as the general development of China is started we will have created a vast market for iron and steel which the present industrial world will be unable to supply. Think of our railway construction, city building harbor works, and various kinds of machineries and implements that will be needed! In fact, the development of China means the creation of a new need for various kinds of goods, for which, we must undertake to create the supply also, by utilizing the raw materials near by. Thus a great iron and steel works is an urgent necessity as well as a greatly profitable project.

In this First Program, we have followed the four principles set forth at the outset pretty closely. As needs create new needs and profits promote more profits, so our first program will be the fore-runner of the other greater developments, which we will deal with shortly.

Sun Yat-sen

The Shanghai Peace Conference

Incidents which Led to the Resignation of both Delegations

Towards the end of April, the outlook of the Peace Conference began to grow dark. The military and financial questions seemed to have been disposed of, leaving only the political and parliamentary questions which were the stumbling blocks to the consummation of peace. The cause of disagreement was found in the difference of their viewpoints. The North emphasized facts or existing circumstances and stood for gradual adjustment, while the South laid stress on theories and stood for more radical changes. No happy medium was discovered, and the positions of the two delegations became delicate.

Early in May, another factor entered into the situation which further complicated matters. It was the diplomatic defeat China met at the Paris Peace Conference over the question of Kiaochow which together with its rights was handed over to Japan for return by Great Britain, the United States and France. This decision caused keen and bitter disappointment throughout the country, and led the Southern delegates to reconsider their positions which they had taken up in order to back up the Chinese delegates at Paris. On the 13th of May, at a formal session, Mr. Tang Shao-yi, the Southern chief delegate, brought forward for the consideration of the Northern delegates, a revised list of proposals of which only two were new. The revised list was as follows:—

1. To declare China's resolve not to agree to the proposed settlement of the Shantung questions decided upon by the European Conference.

2. To declare the invalidity of all covenants, pacts and the like secretly entered into between China and Japan and to severely punish all those directly engaged in or responsible for the consummation of them.

3. To effect the immediate disbandment of the War Participation Army, the National Defense Army, and the Frontier Defense Army.

4 To remove the Tuchuns and Provincial Governors who by their specially notorious maladministration proved themselves unpopular and obnoxious to the people.

5. That the Peace Conference should issue an announcement that the mandate issued by the former President Li Yuan-hung on the 12th June of the 6th Year of the Republic (1917) was illegally issued and therefore invalid.

6. That a Provisional Administrative Council be formed of men of national distinction, selected and recommended by the Conference, for the purpose of superintending the enforcement of the decisions of the Conference. The formation of the Cabinet of unified government shall be subject to the approval of this Council, which shall be dissolved immediately upon convening of the Parliament.

7. All questions whether already passed upon by the Conference or referred to special Committees for investigation and questions to be brought up before the Conference shall be separately dealt with and definitely settled.

8. That the Conference officially recognize Mr. Hsu Shih-chang as the Provisional President of the Republic for discharge of the functions of that office until the formal election by the Parliament of a permanent successor. This article will be given no effect until or unless the previous seven are agreed to.

Among the eight proposals, those of establishing the Provisional Administrative Council and recognizing President Hsu Shih-chang as the Provisional President of the Republic were submitted for consideration for the first time; and the proposal on which the Southwest laid the strongest emphasis was the annulment of the Presidential Mandate of June 12th, 1917 whereby the old Parliament was dissolved.

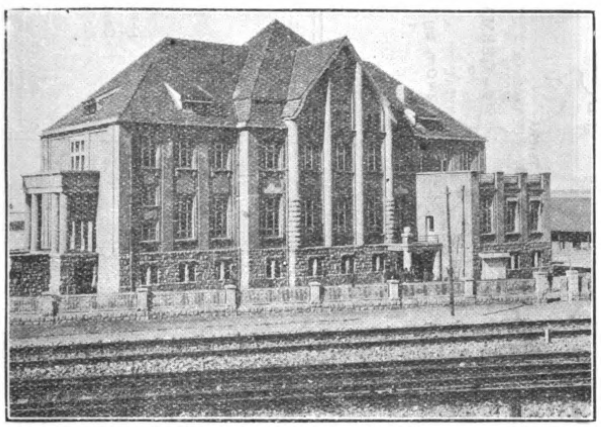
As many of the proposals, notably that for the restoration of the Old Parliament, appeared rather extreme in nature, Mr. Chu Chi-chien, on behalf of the Northern Delegation, asked the Southern delegates to withdraw the demand for the cancellation of the Presidential Mandate, which he declined to discuss. As the Southern delegates felt that they could not agree to the withdrawal of the question for which the Southwest had fought for over a year, and finding themselves face to face with a difficulty which they could not hope to remove, they declared their intention to resign. Their resignations were wired to the Military Government with the request that successors be appointed to continue the negotiations. A day later, the Northern delegates also tendered their resignations to Peking which were accepted. Thus was created an *impasse*, which the Government at Peking and the Military Government at Canton alone could remove.

Although for the moment, the political sky is dark and heavily clouded, it must be borne in mind that governments alone do not form the nation. There are two factors which should always be reckoned with—the people forming the nation, and the nations constituting the world. So long as the people of China and the world at large want peace, there will be peace.

The Economic Rights Secured in Shantung by Japan

The Inherited Convention Enables Japan to Exercise an Industrial Monopoly in the Province

In the peace treaty drawn up by the Allied and Associated Governments at Paris to present to the German delegates for acceptance and signature Germany was made to cede to Japan her rights, titles and privileges in Shantung Province; and in



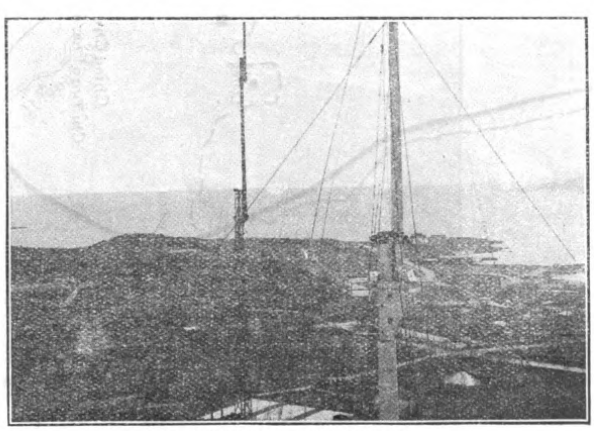
THE CUSTOM HOUSE, TSINGTAO

turn Japan has expressed her intention of handing the leased territory of Kiaochow back to China in due course but of retaining, for development by her nationals, the economic rights held and enjoyed by Germany, plus a settlement under Japanese administration at Tsingtao. There is great heartburning in China because the Peace Conference did not see fit to have the leased territory as well as the economic privileges returned by Germany direct to China, and were it not proved by experience that Chinese popular agitations are as a general rule extremely short lived the situation could be regarded as presaging conditions in this country calculated to make the Japanese bitterly regret their triumph. Thoughtful Chinese realize that the retention by the Japanese of the economic privileges are more serious from the point of view of the Province of Shantung in particular and China in general, than the mere occupation of the leased territory of Kiaochow.

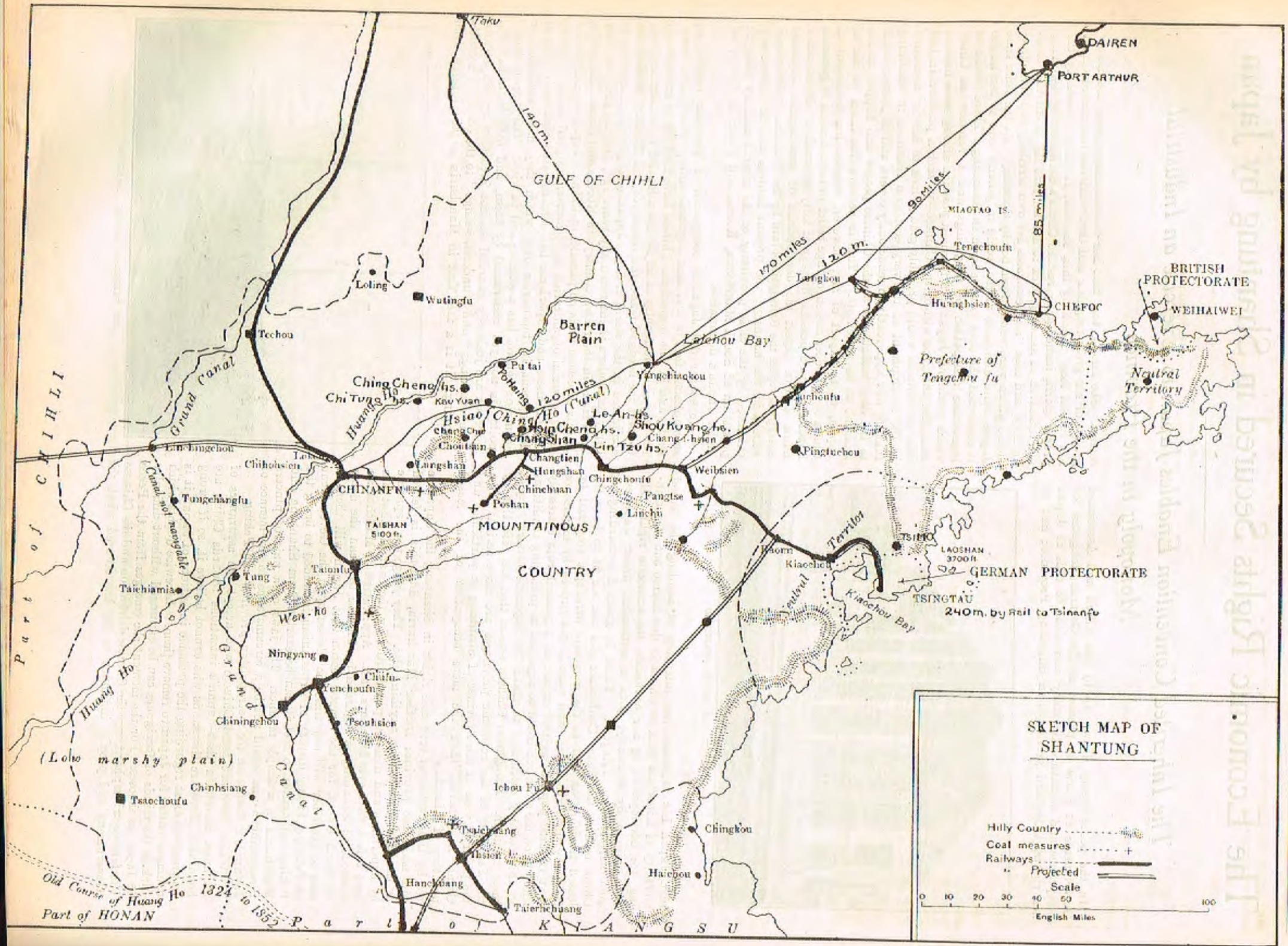
By the exercise of economic rights in Shantung the Japanese can make the province another Manchuria, and this is feared by the Chinese more than anything else. They judge the Japanese by experience and measure possibilities by the example that has been before their eyes for years past. Application of Manchurian methods to Shantung is regarded by Chinese to mean the doom of North China, for the simple reason that Japan will then be able to exert her will any time she pleases upon the Government at Peking. If any display of Prussianism is needed to bring the Peking authorities to heel it can be exerted from Shantung and Manchuria in a simple manner. The jaws of a pair of pincers threatening a nut would not be a circumstance to the menace of Japanese influence on the metropolitan province and Peking.

While there are some Chinese who accept the assurances of Japanese statesmen that Japan's intentions towards China are honorable, there are thousands who cannot believe it, so if wrong impressions exist regarding the probable intentions of Japan it is a simple matter for Japan to remove them. Likewise doubts which lurk in the minds of foreigners can be expunged without difficulty if Japan so chooses. For the moment she emerges from the Peace Conference triumphant over the Chinese delegation and the Chinese Government and people, inasmuch as she has secured what she desires. She knows, too, that her success has injured the *amour propre* of her great neighbor and that what she has gained China has indeed lost. Knowing this, she can, if she is moved by the proper spirit, immediately restore China's confidence by declaring her intention of handing back to her all that she is entitled to as an Ally, and that "all" embraces her own territory and the agreements which were wrung from her by Germany. At the same time Japan could announce to the world in general that so far as she is concerned the door is wide open in Shantung. There would be immediate dissipation of misgivings and a reaction in China which would put Japan in a foremost position among those nations suing for the good-will of the Chinese—in such a position in fact that the Chinese would probably gladly look to her for assistance in the development of the very economic resources in Shantung that she now apparently so tenaciously covets, and at present holds to the deep resentment of the Chinese people who happen at the moment to be articulate. This is perhaps too much to ask of Japan, or to expect of her, however, because her treatment of China to-date does not encourage belief in her altruism or generate hopefulness in a possible display of lofty generosity. On the other hand we can expect the development of considerable Japanese enterprise upon the foundations laid by the Germans in Shantung, which, in the hands of the present holders will be enormously enhanced by the close proximity of the mother country and the possession of South Manchuria, Korea, and Inner Mongolia, all under Japan's dominance.

No sooner did Japanese occupation of Tsingtao become an accomplished fact in 1914 than Japanese enterprise began to assert itself, and in this respect the Chinese have nothing to grumble at, for they show no faculty at all for the adoption of modern methods to meet the needs of trade and commerce and industry as they are conducted in the world to-day. Japanese organized themselves to carry on modern industries many years ago, and the progress they have made in their own country, in Korea, and South Manchuria in this direction finds no parallel in China. Japanese commercial and industrial organization is, of course, designed solely to benefit the Japanese and experience has demonstrated that their idea of development in territories over which they have succeeded in acquiring control has a similar end in view. The "open door" policy is not yet understood by them, and their own national interests are jealously guarded against incursion by competitors, "undertakings" and "understandings" to the contrary notwithstanding. It is a fact that in Manchuria certain foreign firms



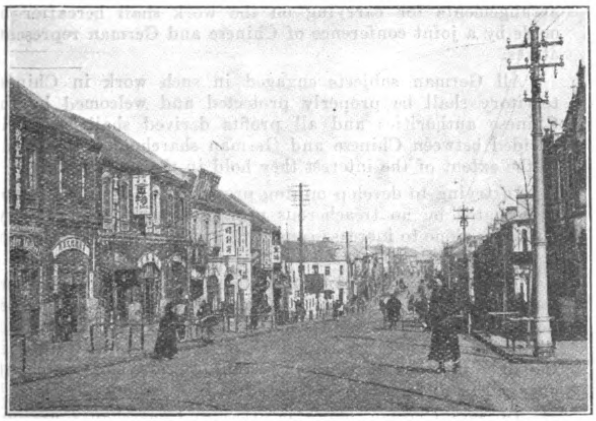
THE WIRELESS STATION, TSINGTAO


SKETCH MAP OF SHANTUNG
Hilly Country
Coal measures
Railways
" Projected
Scale
0 10 20 30 40 50 100
English Miles
DAIREN
PORT ARTHUR
MIAOTAO IS.
Tengchoufu
Lungkou
Huanghsien
CHEFOC
BRITISH PROTECTORATE
WEIHAIWEI
Neutral Territory
Prefecture of Tengchou fu
Taku
140 m.
GULF OF CHIHLI
170 miles
120 m.
90 miles
85 miles
Loling
Wutingfu
Techou
Barren Plain
Laichou Bay
Yangchiaokou
Pu'tai
Ching Cheng hs.
Chi Tung hs.
Kao Yuan
Po Hsing
120 miles
Hsiao Ching Ho (Canal)
Le An hs.
Shou Kuang hs.
Hsin Cheng hs.
Chang Shan
Lin Tzu hs.
Chang-i-hsien
Pingtuchou
Weihsien
Chingchoufu
Fangtse
Linchu
Changtien
Hungshan
Chinchuan
Poshan
Lungshan
Chouhsien
Linchingchou
Chihohsien
CHINANFU
Tungchangfu
Canal not navigable
TAISHAN 5100 ft.
MOUNTAINOUS
COUNTRY
Taichiamia
Tung
Taionfu
Wen-ho
Ningyang
Chiufu
Yenchoufu
Chiningchou
Tsouhsien
Grand Canal
Huang Ho
Part of CHIHLI
(Low marshy plain)
Chinhsiang
Tsaochoufu
Ichou Fu
Tsaichuang
Ihsien
Hanchuang
Taierhchuang
Chingkou
Haichou
Old Course of Huang Ho 1324 to 1852
Part of HONAN
Part of KIANGSU
Kaorn
Kiaochou
Neutral Territory
TSIMO
LAOSHAN 3700 ft.
GERMAN PROTECTORATE
TSINGTAU
240 m. by Rail to Tsinanfu
Kiaochou Bay

have gradually been forced to withdraw commercial interest, being unable to meet the competition of the Japanese organizations, and it is feared that a similar condition will develop in Shantung.

Under the terms of the Paris Peace Treaty:

Germany cedes to Japan all rights, titles and privileges, notably as to Kiaochow, and the railroads, mines and cables acquired by her treaty with China of March 6, 1898, and by other agreements as to Shantung.



SHANTUNG STREET—THE MAIN CHINESE BUSINESS STREET, TSINGTAO

All German rights to the railroad from Tsingtao to Tsinanfu, including all facilities and mining rights and rights of exploitation, pass equally to Japan and the cables from Tsingtao to Shanghai and Chefoo—the cables free of all charges—and all German State property, movable and immovable in Kiaochow is acquired by Japan free of all charges.

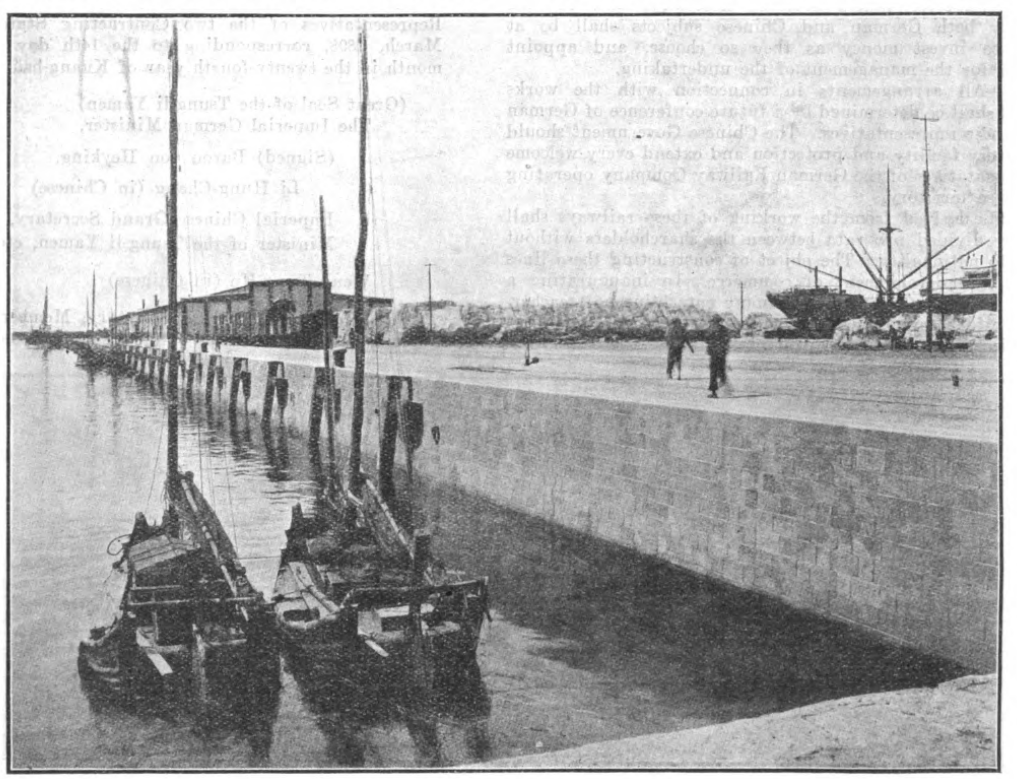
With these to begin with she is able absolutely and irrevocably to control development in the province for the reason that the German rights, titles and privileges embodied in the Convention made between Germany and China on March 6, 1898, respecting the lease of Kiaochow specifically stipulated that **in all cases where foreign assistance, in person, capital, or material, may be needed for any purpose whatever in the province of Shantung such work or supply of materials should be offered in the first instance to German manufacturers and merchants engaged in undertakings of the kind in question.** The proviso was also added that "in case German manufacturers and merchants are not inclined to undertake the performance of such works or the furnishing of materials China shall then be at liberty to act as she pleases," but this in reality obviously means nothing.

Possessed of this complete power of determination as to what development work or industrial expansion shall be done in Shantung is it any wonder that foreign merchants interested in the province view the future with alarm? Is it any wonder that the Chinese fear the worst, though according to the Treaty Chinese themselves are competent to utilize their own capital in the development of any public work or industry in the Province. What the Treaty does is to prevent the Chinese from employing any other foreign capital than Japanese or of installing any other foreign machinery than Japanese or that supplied through Japanese firms. Adherence to the letter of this inherited Convention is expected of the Japanese, but, as we have remarked before, the Japanese have it in their power to give critics considerable disappointment by announcing at the earliest possible moment that they intend to discard the monopoly that comes to them as a legacy of the war in which China appeared as an Ally—a tardy one, perhaps, but excusably tardy when it is remembered that Japan strenuously opposed her entry into the war at an earlier stage than that which signalised her appearance.

The Inherited Rights

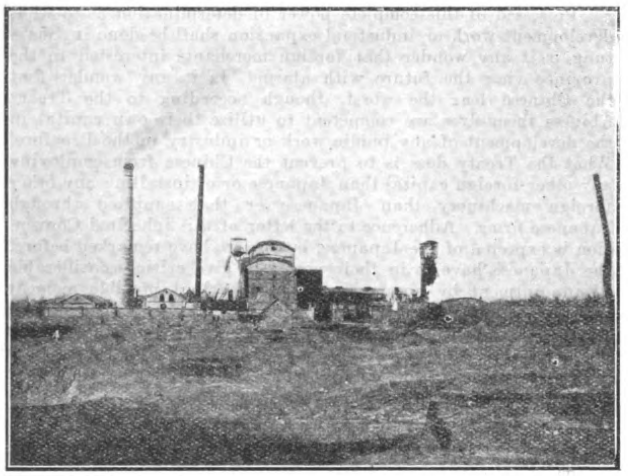
The economic section of the Convention under which Japan will operate her acquired rights in Shantung reads, according to the generally accepted version, as follows:—

The Chinese Government sanctions the construction by Germany of two lines of railway in Shantung. The first will



WHARF 2 AT TSINGTAO

run from Kiaochow and Tsinanfu to the boundary of Shantung province via Weihsien, Tsinchow, Pashan, Tsechuen and Suiping. The second line will connect Kiaochow with Chinchow, whence an extension will be constructed to Tsinan through Laiwuhsien. The construction of this extension shall not be begun until the first part of the line, the main line, is completed, in order to give the Chinese an opportunity of connecting this line in the most advantageous manner with their own railway system. What places the line from Tsinanfu to the provincial boundary shall take in en route are to be determined hereafter.



THE FANGTSE COAL MINES—GENERAL VIEW FROM THE EAST

II.—In order to carry out the above mentioned railway work a Chino-German Company shall be formed, with branches at whatever places may be necessary, and in this Company both German and Chinese subjects shall be at liberty to invest money as they so choose, and appoint directors for the management of the undertaking.

III.—All arrangements in connection with the works specified shall be determined by a future conference of German and Chinese representatives. The Chinese Government should afford every facility and protection and extend every welcome to representatives of the German Railway Company operating in Chinese territory.

Profits derived from the working of these railways shall be justly divided pro rata between the shareholders without regard to nationality. The object of constructing these lines is solely the development of commerce. In inaugurating a railway system in Shantung Germany entertains no treacher ous intentions towards China, and undertakes not to unlawfully seize any land in the province.

IV.—The Chinese Government will allow German subjects to hold and develop mining property for a distance of 30 li from each side of these railways and along the whole extent of the lines. The following places where mining operations may be carried on are particularly specified along the northern railway from Kiaochow to Tsinan, Weihsien, Pashanhsien and various other points; and along the southern Kiaochow-Tsinan-Chinchow line, Chinchowfu, Laiwuhsien, etc.

Chinese capital may be invested in these operations and arrangements for carrying on the work shall hereafter be made by a joint conference of Chinese and German representatives.

All German subjects engaged in such work in Chinese territory shall be properly protected and welcomed by the Chinese authorities and all profits derived shall be fairly divided between Chinese and German shareholders according to the extent of the interest they hold in the undertakings.

In trying to develop mining property in China, Germany is actuated by no treacherous motives against this country, but seeks alone to increase commerce and improve the relations between the two countries.

The Chinese Government binds itself in all cases where foreign assistance, in persons, capital or material, may be needed for any purpose whatever within the Province of Shantung, to offer the said work or supplying materials, in the first instance to German manufacturers and merchants engaged in undertakings of the kind in question.

In case German manufacturers and merchants are not inclined to undertake the performance of such works or the furnishing of materials, China shall then be at liberty to act as she pleases.

The above Agreement shall be ratified by the Sovereigns of both the Contracting States, and the ratifications exchanged in such manner that, after the receipt in Berlin of the Treaty ratified by China, the copy ratified by Germany shall be handed to the Chinese Minister in Berlin.

The foregoing Treaty has been drawn up in four copies, two in German and two in Chinese, and was signed by the Representatives of the two Contracting States on the 6th March, 1898, corresponding to the 14th day of the second month in the twenty-fourth year of Kuang-hsü.

(Great Seal of the Tsung-li Yamen)
The Imperial German Minister,

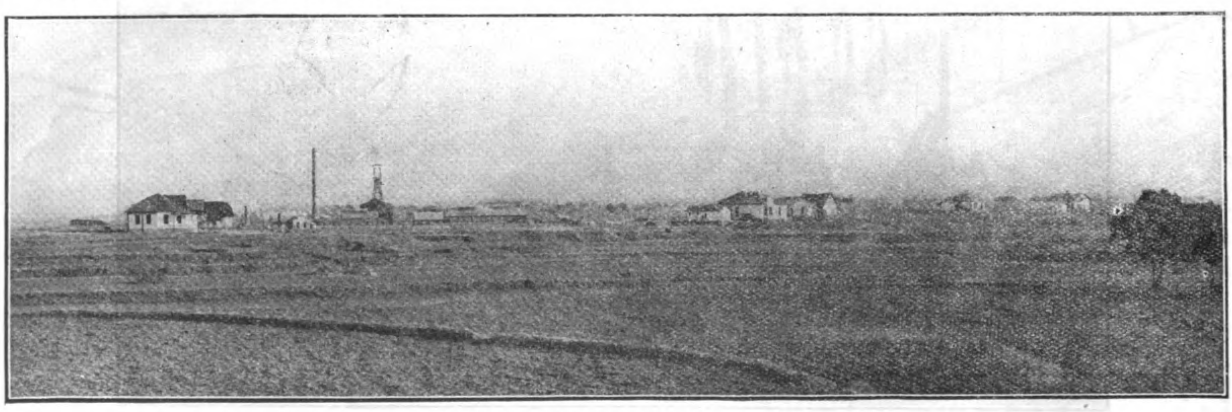
(Signed) Baron von Heyking.

Li Hung-Chang (in Chinese)

Imperial Chinese Grand Secretary,
Minister of the Tsung-li Yamen, etc., etc.

Weng Tung-Ho (in Chinese)

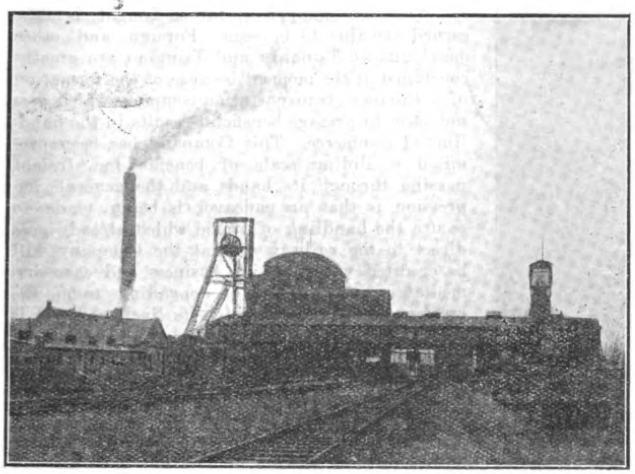
Imperial Chinese Grand Secretary, Member of the Council of State, Minister of the Tsungli Yamen, etc., etc.



THE HUNGSHAN COAL MINES

The Railway Situation

The railroad from Tsingtao to Tsinanfu, the capital of the Province, which is mentioned in the Peace Treaty as passing, with mining rights, to Japan, was built by the Germans under the above Convention. The second line mentioned in the Convention was not built, though on December 31, 1913, a preliminary



THE FANGTSE COAL MINES—MAIN ENTRANCE FROM WEST

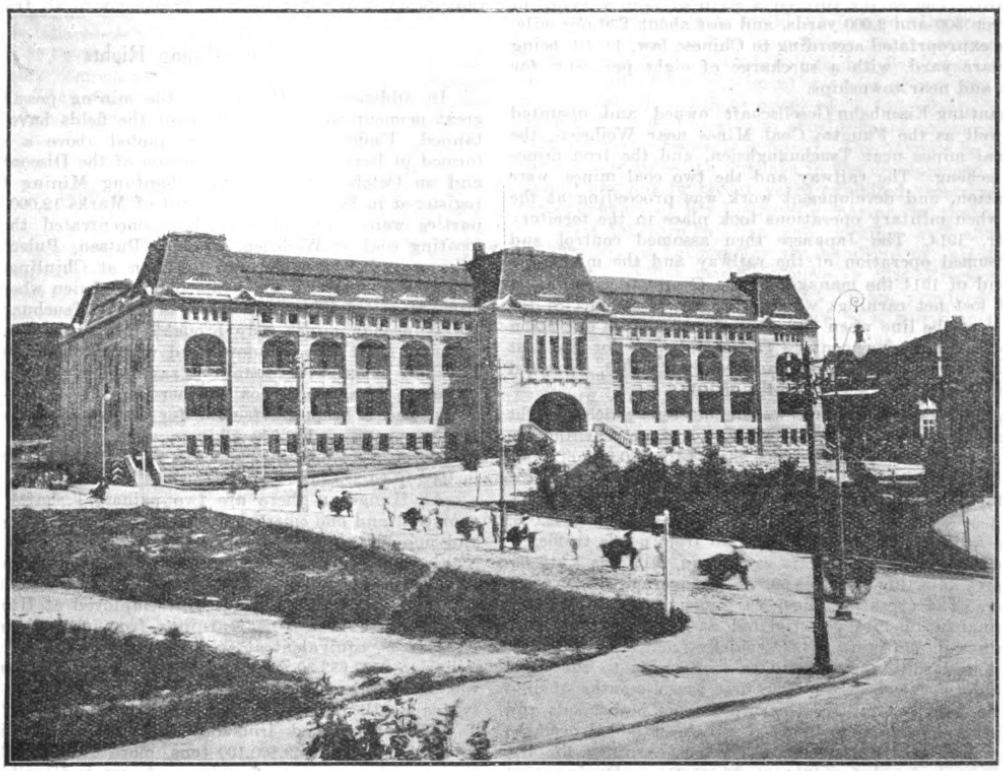
contract[1] was signed by the Chinese Government with the Germans for the construction of two other railways, one from a point on the north side of the Yellow River near Tsinanfu, to a point on the existing Peking-Hankow Railway between Shuntehfu and Hsinhsianghsien, and the other from Kaomi, near Tsingtao, to Hanchuang, on the Tientsin-Pukow Railway, near the southern border of Shantung. In consideration of the granting of these railways the Germans agreed to cancel[2] all rights of railway construction provided in the Convention above quoted. They also agreed to modify the mining rights[3] given by the above Convention, in a manner referred to later on in this article.

The agreement for the new railways mentioned was not operated upon by the Germans, the final contract arranging details being fixed but a couple of months before the outbreak of war, namely, in June, 1914. The Japanese, however, took advantage of their position in Shantung, and the impecuniosity of the Chinese Government, to secure a contract for the construction of two lines[4] based on the German agreement, in return for a loan, an advance of Yen 20,000,000 at 8 per cent. interest being made after the signature of the preliminary contract. This agreement called for the building of a line from Tsinanfu to Shuntehfu, on the Peking-Hankow Railway, and from Kaomi to Hsuchowfu, the latter station being the junction of the Tientsin-Pukow Railway with the one running westwards to Kaifeng, Honanfu, and beyond.

The Tsingtao-Tsinanfu Railway, which the Japanese have been operating since their occupation, and which will now be converted into a Sino-Japanese concern, no doubt, is some 400 kilometres in length with one branch to Poshan of some 40 kilometres in length, another to the Hungshan coal mines some seven kilometres in length, and a third to the Fangtze mines some four kilometres in length, with an extension of eight kilometres from Tsinanfu, giving connection with the Yellow River.

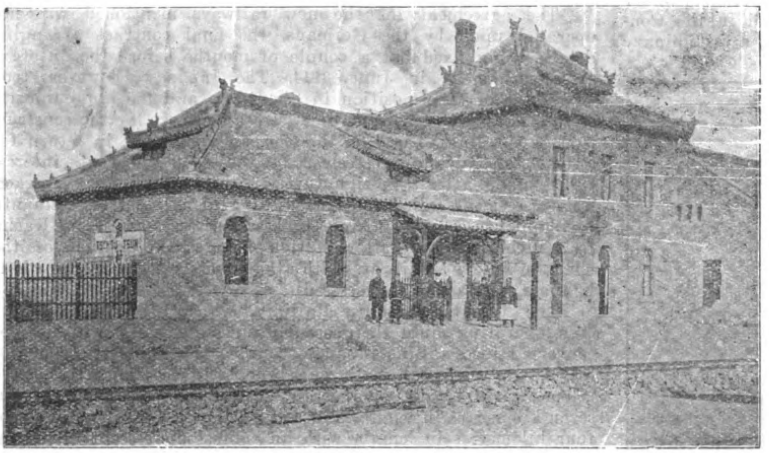
The concession for the line was obtained from the German Government by a syndicate headed by the Deutsche-Asiatische Bank formed for the establishment of a German-Chinese Company with the title of the "Schantung-Eisenbahn-Gesellschaft," on June 1, 1899. On March 21, 1900, a construction agreement was signed between the Chinese Government and the Company, the

[1] See FAR EASTERN REVIEW, November, 1918, for agreement.
[2] See FAR EASTERN REVIEW, November, 1918, for agreement.
[3] See FAR EASTERN REVIEW, November, 1918, for agreement.
[4] See FAR EASTERN REVIEW, May, 1919, for agreement.



TSINGTAO: THE GOVERNMENT BUILDING

original capital of the Company being Marks 54,000,000, though this was increased when the Company took over the rights and property of the Shantung Mining Company on January 1, 1913, to Marks 60,000,000.



SECOND CLASS STATION AT TSCHOU-TSUN

Construction began on September 23, 1899, when Prince Henry of Prussia turned the first sod, work being carried on from both ends, with a labor force of some 25,000 men. The first section of 74 kilometres was opened to traffic to Kiaochow on April 8, 1901, and further sections were put into operation the same year. On June 1, 1902, the whole of the first half of the line to Weihsien was opened for freight and passenger traffic and on June 1, 1904, the whole line, including the Paoshan branch was opened. The railway was five years in construction and the entire cost of building and equipment was Marks 52,901,266, or, including interest on capital, and translated into sterling, about £9,200 per mile. The survey covered a strip of land varying in breadth between 500 and 2,000 yards, and cost about £36 per mile. The land was expropriated according to Chinese law, 1s. 1d. being paid per square yard, with a surcharge of eight per cent. for land in crop and near townships.

The Schantung-Eisenbahn-Gesellschaft owned and operated the line as well as the Fangtze Coal Mines near Weihsien, the Hungshan coal mines near Tsuchuanghsien, and the iron mines near Chinlingcheng. The railway and the two coal mines were in full operation, and development work was proceeding at the iron mines, when military operations took place in the territory in September, 1914. The Japanese then assumed control and gradually resumed operation of the railway and the mines.

At the end of 1914 the manager of the Company compiled a statement of lost net earnings which will give some idea of the financial state of the line when the war interrupted its operation under the original management. The calculation for the lost net earnings was based upon the balance sheet for 1913, corrected by the returns for the first seven months of 1914.

The freight carried during 1913 was 946,610 tons which brought in a gross revenue of $3,123,324.49, the ratio of net earnings to gross earnings as shown by the balance sheet being 70.31 per cent. This ratio is stated to be fairly constant and applied to the figures for 1914 gives a total estimated net earnings from goods traffic in 1914 between Kiaochow city and Tsinanfu as $12,242,006, equivalent to a daily net return of $340,276 from goods traffic.

The total number of passengers carried in 1913 was 1,317,438 who paid fares totalling $951,848.50, or an average of 72 cents per passenger. The gross passenger earnings between Kiaochow city and Tsinanfu in 1914 is estimated at $507,271.69. Miscellaneous earnings in 1913 were $54,988, chiefly from telegraph fees, rent on land and rolling stock and sale of rights to cut grass and wood and to collect ashes. The first seven months of 1914 showed an increase in total gross earnings from both goods and passenger traffic amounting to $135,600, which, extended over the whole year would give $232,457.14. The net earnings for the whole line are calculated for 1914 at $3,103,311. During 1912 there were on the average 41 locomotives and 1,121 cars on hand. We do not have the figures for 1913 or 1914.

Subsequent to the occupation the railway was placed in the hands of the South Manchuria Railway officials, and if it remains in their hands will, from a passenger point of view at least, be run with greater efficiency than it has been in the past if the South Manchuria system can be taken as a criterion.

What will happen so far as freight is concerned remains to be seen. Foreign and other merchants at Tsinanfu and Tsingtao are greatly concerned at the moment because of the formation of a Japanese transportation company which does not seem to presage beneficial results in the handling of commerce. This Company has been promised a sliding scale of benefits for freight passing through its hands and the general impression is that an endeavor is being made to secure the handling of traffic which already goes direct to the railway so that the Company will be credited with existing business and earn immediate profits instead of depending upon the creation of new business for its livelihood. It is stated that in order to secure the handling of existing traffic the Company is offering various firms a rebate of one per cent. upon their freight. This practice means that the Company will eventually secure control of the rolling stock and will be able to obstruct any shippers who do not conform with its proposals. Representations seeking elucidation have already been made by Tsingtao firms to the Tsingtao authorities but so far no satisfaction has been received, nor has it been explained how the railway can afford to pay a large percentage on business which it already has on its books. This matter may be adjusted when steps are taken properly to organize the railway under new conditions brought about by the decision of the Peace Conference, but if it is not then the Japanese allow one further institution to grow under favored conditions which will provide one further argument for critics in support of their contentions that Japan will not give equal treatment to all traders.

The Mining Rights

In addition to the railway the mining possibilities are of great moment to Japan. Some of the fields have already been tapped. Under the Convention quoted above a syndicate was formed in Berlin under the direction of the Disconto-Gesellschaft and on October 10, 1899, the Shantung Mining Company was registered in Berlin with a capital of Marks 12,000,000. Mining parties were sent out and they concentrated their efforts on locating coal at Weihsien, Poshan, Putsan, Putschi, Tawenkou, Yihsien and Kuetschow and for iron at Chinlingchen. Mining was ultimately undertaken in 1901 at Weihsien where the Fangtze mines were opened and operated, and near Tsuchuanghsien, where the Hungshan mines were brought into operation. At Fangtze a double shaft was put down and works were erected comprising a repair shop with foundry, saw mill, coal separation and shipping department, coal washer capable of handling 80 tons daily, and a briquette factory for 30 tons daily output. About 25 Europeans and 2,000 Chinese were employed, and while in 1902-03 only 9,178.62 tons of coal were produced, the output rose in 1909-10 to 273,354.04 tons.

At Hungshan there are two principal shafts for rich and poor coal and one emergency shaft; one coal washer for rich coal and one for poor; one coal separator with carriage; one large repair shop; and one electric shop. In 1906-7 the mines produced 14,646.05 tons, and in 1913 a total of 414,000 tons. About 30 Europeans and 5,400 Chinese were employed at Hungshan.

During 1913 the net earnings from the mines were Marks 1,147,366.59, equivalent at an average exchange of two marks per dollar to $573,683.30. During the first seven months of 1914 there was an increase in the net earnings of $140,000; estimated for twelve months to be $240,000, giving a total of $813,033.30.

The ascertained iron ore deposits at Chinlingchen were estimated to total 49,100,100 tons, more than 20,000,000 of which lies in such a position that it can be worked easily and cheaply.

In addition to this it is estimated that another 30,000,000 tons of ore are available. To develop this deposit the Germans decided to erect works at Tsangkou with a preliminary two ovens with a daily output each of 130-150 tons, and it was expected that mining would begin in 1915. The property consists of several mines, such as Tieshan, Tanshan, Yuepaoshan, Szepaoshan, Huanwangshan, etc , and immediately after occupation of the territory the Japanese began investigating the deposits. The Government of Tsingtao decided to work the property itself and secured Yen 2,000,000 to begin operations. Railways were put under construction to connect the mines with the main line and it was expected to turn out 50,000 tons of ore before the end of 1918. Iron is one of the natural products chiefly required by Japan, so it can be taken for granted that the Shantung deposits will be worked to the limit now that title to them has been definitely given to her. Coking coal can be found at no great distance, but the best coal in the province is located near Yihsien, where 60,000 tons annually is being coked by the Chung Hsin Mining Company, which was started in 1880. The Company is purely Chinese and operates eight shafts. The newest shaft equipped with foreign machinery was expected to produce 2,000 tons per day. The Tientsin-Pukow Rai'way has a branch line to the mines and takes for its own use some 60,000 tons of coal per year. The Company claims a daily output of 4,000 tons. A field of coal at Ichow is said to be the most extensive in the province. Both of these fields will be tapped by the new railway which the Japanese propose to build from Kaomi to Huschowfu, via Ichow and Yihsien.

When the Convention was signed the Railway Company had the right to mine within 30 li of each side of any railway it built, but when the agreement was signed for the construction of the two new lines above mentioned this right was modified, and certain areas surveyed were relinquished, notably at Paoshan and Tzuchuan. The mines at Fangtze and Hungshan as well as the Chinlingchen were owned by the Shantung Mining Company (the Schantung-Berghau-Gesellschaft) but on March 13, 1913, this company was liquidated and the concessions were transferred to the Shantung Railway Company (the Schantung-Eisenbahn Gesellschaft)—against compensation of Marks 5,400,000 to be covered by new shares—which continued to operate them until the occupation of the territory by Japan. This Company intends to try and secure compensation for their losses both of property and earnings. They estimated the net revenue losses for 1914 from both railway and mines to be $12,006 per day.

Japanese Expansion Plans

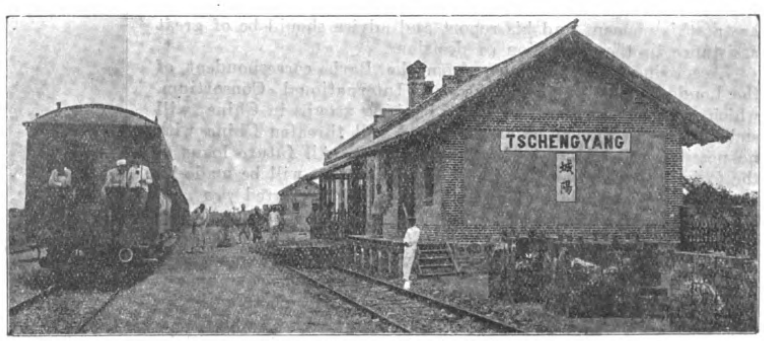
The importance of the natural wealth of Shantung as well as the great advantages of Tsingtao as a commercial port and a site for industrial expansion is fully appreciated by the Japanese. Between the date of occupation and the end of 1918 numerous factories were opened, 17 being placed in operation in the eighteen months ended December 31, 1918. The inducements offered for the establishment of factories were published in last issue, and no doubt these will be increased to Japanese now that the Peace Conference decision has been so favorable to Japan.

Of the Tsingtao enthusiasts perhaps Mr. Yoshinosuke Akiyama, the Civil Governor, heads the list. In an article written by him for the "Chugwai Shogyu Shimpo" he shows himself to be possessed of vision, for he prophesies a time when the products of even Tibet and other far distant regions will come over railways to the port for shipment abroad. He points out rightly enough that the port holds behind it not only the rich resources of Shantung but also the products of Shansi, Honan, Shensi, and other provinces where coal and other products are plentiful. Clearly it is the aim of Japan to make Tsingtao a great and valuable shipping centre. Already they aim at making Kobe the transhipping point for trans-Pacific cargoes. That port has been developed to berth the largest liners at piers and there cargoes for China will be transhipped, if plans develop successfully, and be conveyed on Japanese bottoms, to South China, to Shanghai, to Tsingtao, to Tientsin, to Dairen, and to Korean ports

With an extension of the Shantung railway to the Peking-Hankow line and beyond into Shansi the Japanese will tap one of China's wealthiest regions, while they will make supreme efforts to attract freight from the lines junctioning at Hsuchowfu when the projected line is built to that place. A glance at the map will indicate the value of the railway system which the Japanese have the opportunity now to develop. Already they have surveyed the projected lines in Shantung Province and have even had surveyors making a reconnaissance as far west as Sianfu, if reports are correct. An extension of the projected line to Shuntehfu westwards will take them into the great iron and coal fields of Shansi, and it is iron that Japan is most urgently needing for her industrial development and for purposes of a military nature. With a well devised system of railways and traffic inducements Japan can unquestionably attract to Tsingtao produce from an extensive hinterland blessed with a wealth of undeveloped resources.

If her plans mature uninterruptedly with regard to the direction of shipping from her own ports Tsingtao will become the most important port in North China. Shanghai at present holds that distinction, but unless steps are taken to make that port capable of taking the large trans-Pacific liners which are bound to be put into service in the future it will be found that big liners will regard Shanghai as but a port of call for passengers, while cargo will be mostly picked up at Kobe, where it will be carried by small steamers able to navigate the river at Shanghai. Greatness as a shipping centre in very likely to depart from Shanghai as a port of transhipment in favor of Kobe, if foresight is not used by the Shanghai people. At present the harbor works at Kobe are designed for big things in the future, and the inducements that can be offered by that port are that cargo landed on its wharves can be immediately despatched anywhere to Korea, Manchuria, North China and Central China by steamers which can navigate any of the available rivers in China now shut to ocean-going liners.

Japan has done splendid work in developing the harbor at Dalny and that port is now doing an increasing business. At Tsingtao she has, in what will be her Settlement there, docking accommodation for at least 20 steamers of over 300 feet in length with a low-tide depth of water of 33 feet alongside the wharves. Above all she will be able to provide more accommodation for the biggest vessels if such is required. Credit must be given to Japan for the enterprise she displays in the development of communications. She has in recent years exhibited remarkable acumen in the expansion of her mercantile marine, in the increase of her facilities for ship-building and docking, and above all in the preparation of harbors for the handling of intensely developed trade. China has made no move in this direction at all, and the future will surely show that Japan, provided she acts with sagacity, will hold the first place as a maritime peoples in the Pacific and will not be far behind any others in parts of the western world where shipping has advanced to the highest point of efficiency. With control of transhipment at Kobe for ports in North and Central China she can be counted upon to advance with giant strides, and no one can blame her for developing her



A THIRD-CLASS STATION—TCHENG-YANG

possessions to enable her to become premier in this direction. Certainly no one will begrudge her the position she has worked herself into if she but plays the game Her future solely depends upon her actions in this direction. If the open door policy remains a dead letter with her then she will incur justifiable and certain enmity. On the other hand if she makes of it a real and tangible thing then she will be able to reap the benefit of her enterprise to the full. The question is whether she will be big enough, now that she has a substantial hold in Shantung as well as in Manchuria and Inner Mongolia, to say nothing of Fukien, to demonstrate that she knows what playing the game really is. The accusations made against her with regard to Manchuria can be wiped out at a stroke of the pen. An order, effectively enforced, removing discriminations and penalizing officials guilty of actions calculated to close the door to equal commercial rights is all that is required.

A Scrap of Paper?

But even if Japan does not do that she at least now has a chance that is unique to demonstrate handsomely that the Lansing-Ishii Agreement, made as recently as November 2, 1917, is no mere "scrap of paper." That Agreement in part made the following significant stipulation:—

> "The Government of the United States and Japan deny that they have any purpose to infringe in any way the independence or territorial integrity of China, and they declare, furthermore, that they **always adhere to the principle of the so-called 'open door,' or equal opportunity for commerce and industry in China.**
>
> "Moreover, they mutually declare that they are opposed **to the acquisition by any Government of any special right or privileges** that would affect the independence or territorial integrity of China, **or that would deny to the subjects or citizens of any country the full enjoyment of equal opportunity in the commerce and industry of China."**

Reorganizing the Banking Consortium

Mr. John Jay Abbott, the Chicago Banker, who came to China recently on behalf of the leading American Banks to investigate conditions in view of the possibility of a reorganization loan being negotiated, was suddenly recalled to America about the middle of May, no doubt to attend the meetings of the Banking Consortium now taking place in Paris. The first meeting was scheduled for May 12 as the result of negotiations between the American Government and the Allied Foreign Offices Mr. Thomas Lamont was nominated to represent the American Group (which includes thirty banks) at the opening meeting; Mr. M. Odagiri, of the Yokohama Specie Bank, who is well-known as representing Japan in the Consortium at Peking, again represents Japan; M. Simon, of the Banque de l'Indo-Chine, represents France, and Sir Charles S. Addis, of the London office of the Hongkong and Shanghai Bank, represents the British Group. The Consortium will consider fully China's financial state with a view to a Reorganization Loan, and will specially arrange for financial operations in connection with railway construction and industrial development. Mr Abbott will be able to aquaint the Consortium with conditions as they are at this moment and his report and advice should be of great assistance in the formation of decisions.

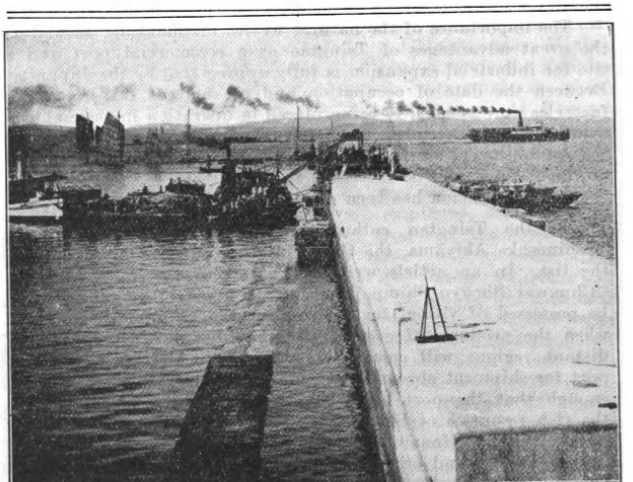
According to information from the Paris correspondent of the London "Daily News" "the new International Consortium, which will combine the interests of banking groups in China, will embody no government guarantees and will threaten China with no possible infringement of her sovereignty. All future loans to the Chinese Government or individual provinces will be made by the group as a whole and responsibility will be shared *pro rata* by the participating banks. It is proposed that the existing interests of participating banks in China should be similarly pooled. The proposal if carried out would mean that particular Powers would no longer have a predominant influence in particular regions of China. The importance of that doctrine in its application to Japan's interests in Shantung for example is obvious. It is definitely laid down that no future loans will be allowed to involve the creation of special sphere of influence, in China, and there is strong reason to hope that the result will be marked stimulation in the development of China's transport system and the exploitation of her vast mineral resources."

Slandering America

Japanese newspapers are at present amusing themselves by carrying on an intense anti-American campaign. They are apparently incensed at the progress being made by the agitation in China against the cession of Shantung to Japan by the Paris Peace Conference, and feel it necessary to find someone to blame for it. None of them can believe that the cession of Shantung to Japan by the Peace Conference could be responsible. The type of slander being published against Americans in China can be gauged by the statements of the "Osaka Asahi," a responsible paper of some standing in Japan, which waxes wrath as follows:

> "Whether unscrupulous or not, the untiring efforts made by Americans in China to promote their interests are commendable. It is reported that they have lately established American-Chinese Young Men's Clubs in the various commercial centres in China. These clubs are visited, it is alleged, by Chinese and foreign ladies of the street, and thus Chinese young men are lured in an attempt to win over the middle classes of China. Such a policy is sordid in the extreme, but it reveals a very intimate knowledge of the weak points of Chinese, and none but Americans could adopt any such policy. Of course, such a policy will be opposed by enlightened members of the Chinese public, and it is doubtful if it can do any lasting good for Americans, but their action is commendable in that they never get tired of trying any means to promote their interests. We pity Japan who has simply declared her policy has been altered, but who has done nothing particular to further her relations with China. At any rate, the assiduity of the Americans gives us a lesson."

It is unnecessary to say, of course, that there is not a tittle of truth in the disgusting allegation made in this paragraph, but there is something of amusement. The risible faculties of all who know China will be excited by the pathetic lament that Japan "has done nothing particular to further her relations with China." The paper forgets the Twenty-one Demands and the Nishihara agreements, or perhaps, like Mr. Lloyd George, it has never heard of them! On the other hand the paper may mean that Japan has done nothing to further friendly relations with China. If that is the construction desired then we agree with the "Asahi" of Osaka. It has made a great discovery, and is fully entitled to "pity Japan."



THE NEW WHARF IN DAIREN HARBOR.

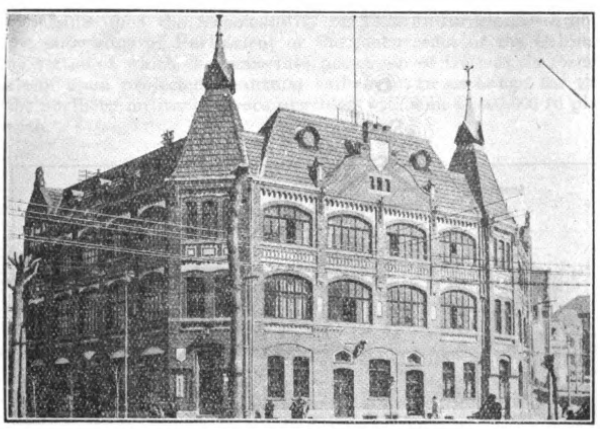
The new Third Wharf at the western end of Dairen harbor, which has been under construction since March, 1913, is to be completed soon. The quay line will be 5,300 feet length.

PRESIDENT WILSON:

"Shall the Strong Do as they Will and the Weak Suffer Without Regrets"

Japan's Triumph over China—How it was Won—What it Means, and how it is being Resisted by the Humiliated Chinese in a Boycott of Japanese Institutions and Products

The Powers represented in Paris have decided that Germany's heir to Tsingtao—or rather Germany's economic heir in Shantung—shall be Japan, and China is bubbling like an unwatched pot. People differ in their views as to China's right to take



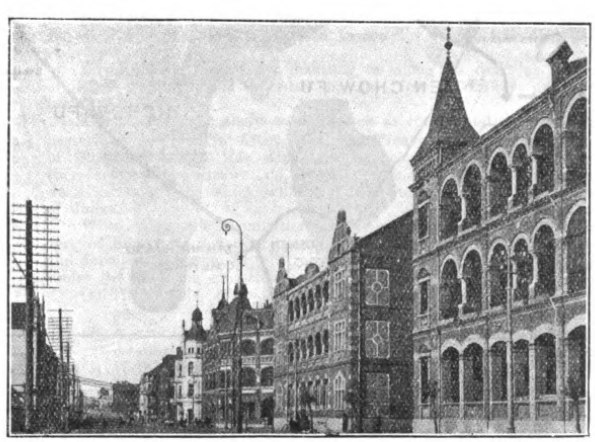
THE FORMER GERMAN POST OFFICE, TSINGTAO

exception to the Peace Conference settlement, for some think that China, having earned nothing got nothing, while others think that she has been most unjustly used; but however little or much sympathy is lavished upon China, the entire population of Occidentals in China is frankly and openly disgusted with the decision which gives Japan so much material benefit, so much satisfaction, so much "face" in the Orient, at the expense of China, and their own national interests. The diplomats, the press, the merchants—all classes indeed—feel almost as badly about it as the Chinese, and, if we are to judge by precedent, will feel it longer. The representatives of the various Governments in Paris have chosen to ignore the opinions of residents in the East, and have left to them nothing but the humiliating task of explaining to their hosts, the Chinese people, how it happened. This was done, we are forced to assume, as a matter of policy, big world policy as the world is viewed from Paris, where it is probably easy to forget that half of the world's population lives in Asia, and that Japan and China constitute a quarter of it, and by no means the stupidest quarter.

But what do Occidentals have to say to the Chinese now? There are two lines of argument which they can take, and both have been adopted in the press. They can turn upon the Chinese and tell them that they deserved no better, that they have allowed a small group of openly unpatriotic officials to barter away all of China's richest resources, to pawn her railways, to pawn her mines, to take Japanese agents into the closest confidence in the councils of state, to enter into secret treaties which bound China to abide by Japan's decision in the disposition of Tsingtao and have permitted the country to be overrun by devastating armies financed with the money which Japan advanced to this same unpatriotic clique—all without effective criticism or opposition. They can impress upon the Chinese that their own treaties with Japan, negotiated in 1915 and in 1918 by the recognized Government which the Chinese people never took the trouble to overthrow, were an unsurmountable barrier to the execution of elemental justice upon Japan at the Peace Conference and that the Powers were forced to ignore the claims of the Chinese people because they had been sold by their own corrupt officials.

Or they can continue to talk of "policy" and of the reckoning that is still to come but is just a little postponed. They can point out that it was most essential that Japan should remain a party to the peace conference and a member of the League of Nations. That by threatening to withdraw from both she weakened the Allies' position vis-à-vis Germany, and menaced the very existence of the League; that Shantung was given Japan, therefore, as a bait to lure her into the League of Nations, and that by-and-bye, when all is settled in Europe and the League is functioning, China can appeal to this supreme court of the world and have the satisfaction of seeing the claims of abstract justice recognized. Do Occidentals believe this? They don't know; but it is very apparent that none of them is preaching this gospel with an earnestness that carries conviction. Japan has a much better story to tell now; the Paris Peace Conference has furnished her with absolute proof that might is still right in the East whatever it may be in the West, and certain Chinese are only too ready now to believe that the wicked flourish.

The events which led up to this disappointment and disillusionment are fairly familiar to everyone, but for the sake of telling a complete story they must be reviewed in bare outline at least.



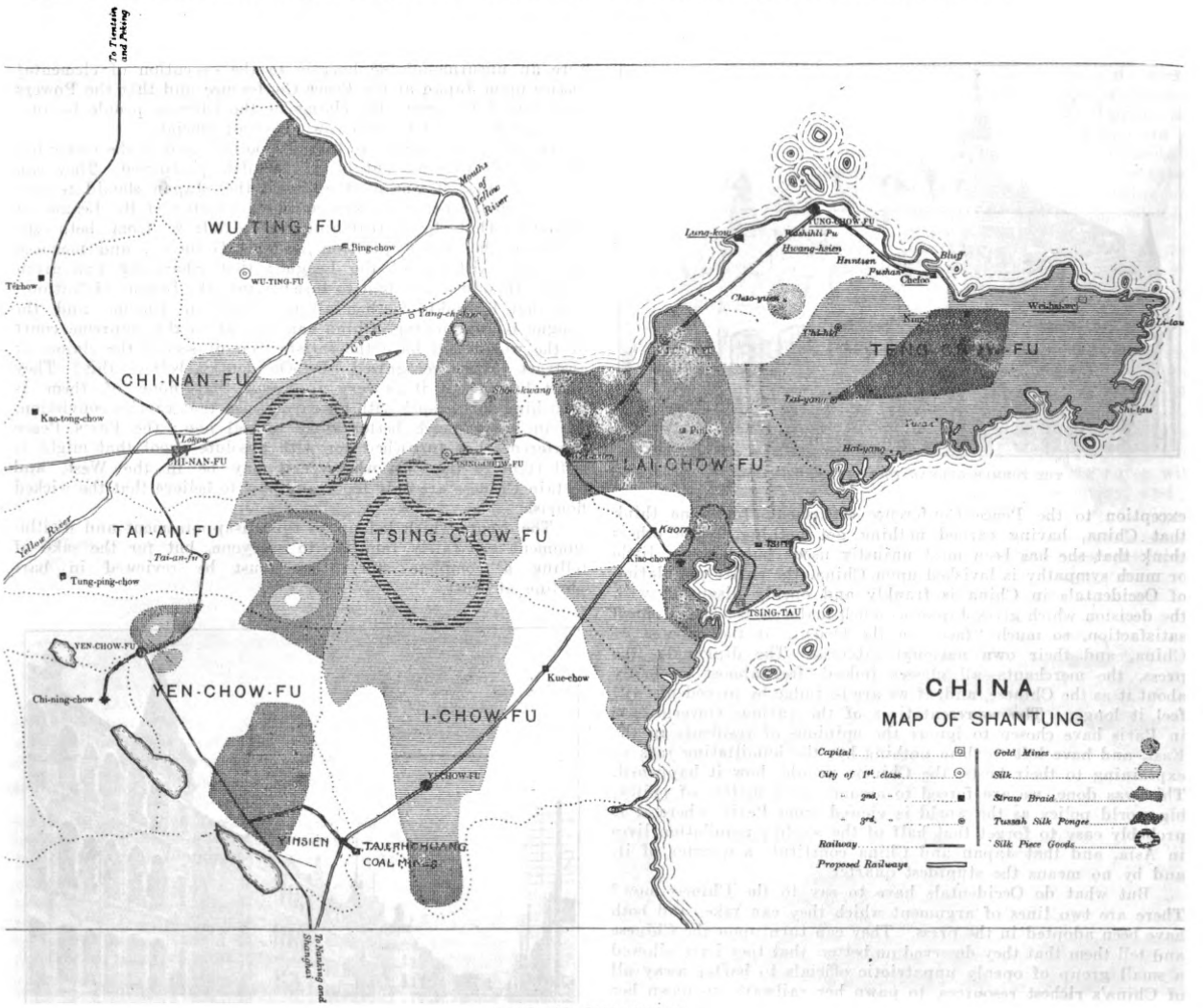
TYPICAL TSINGTAO BUILDINGS IN SAGAMACHI, FORMERLY PRINZ HEINRICH STREET

Review of Events in Shantung

The Germans obtained the Kiaochow concession by virtue of a convention signed March 6, 1898. This gave them special privileges in a belt 33 miles wide running around Kiaochow Bay, which included the right to move troops, but with the specification that the territory in this zone was still under Chinese sovereignty. It also gave them the Treaty Port of Tsingtao, where fortifications were erected and the Germans enjoyed extraterritorial immunity from Chinese interference. It also gave them the right to grant concessions for two railways in Shantung province (afterwards extended) and a railway zone 20 miles wide in which mining operations could be carried on under German direction and by German capital. Under the terms of this treaty Tsingtao was built and fortified, the Tsingtao-Tsinan Railway was constructed and mining enterprises were started. Shantung was looked upon as Germany's sphere of influence and it was agreed that if the Chinese wished to construct railways or open mines elsewhere in the province, German investors and German materials would be given the preference.

In 1914 Japan declared war upon Germany and announced that she would support Great Britain's interests by taking Tsingtao. Yuan Shih-kai offered to bring China in as an ally and take it, but was advised against such action. A Japanese fleet blockaded the German treaty port, supported by British and French vessels, and a Japanese military force approached Tsingtao overland from the port of Lungkow, and, with the assistance of a British contingent—small it is true—besieged it. After a short struggle, which was a mere skirmish compared with what was going on in Europe, the Germans surrendered and the Japanese expeditionary force occupied the place.

In 1915 the 21 Demands were presented to China secretly and were discussed in conferences at which the Japanese permitted no minutes to be taken. The Chinese were pledged to secrecy, and, it is now a matter of historical record, when the nature of the demands leaked out the foremost statesman in Japan deliberately misled the statesmen of every other country on earth, denying that Japan was presenting any such demands as those which afterwards were known to have been included in the obnoxious "group five." The first of the demands concerned Shantung. The Chinese were forced to agree* that they would abide by any decision reached between Japan and Germany at the Peace Conference. In 1917, before America and China came into the war, Japan extracted from Great Britain, and later from France and Italy, a pledge that she would be supported in her claim upon Tsingtao at the Peace Conference.



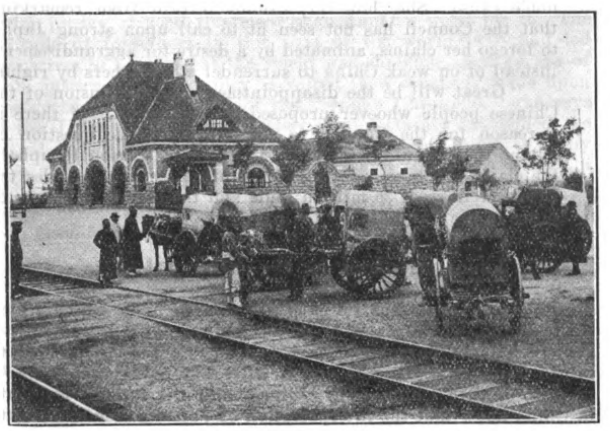
MAP OF SHANTUNG

Showing the areas from which the chief products like silk, strawbraid, tussah silk, pongee, silk piece-goods, etc., are derived. Groundnuts, beans, hides, skins, bristles, etc., are produced in all parts of the province. Statistics in regard to this trade appeared in the February issue of THE FAR EASTERN REVIEW. The location of the coalfields is shown on the map on another page.

In exchange for this pledge she agreed to relinquish her claim to the Pacific Islands south of the equator. Japan had announced in her declaration of war against Germany that she proposed to return Kiaochow to China and towards the end of May, it was reported, notified the Chinese Government that she would restore Kiaochow, with full sovereignty, to China.

In August, 1917, China, following America's example, declared war upon the Central Powers. All German treaties with China were abrogated and all German concessions, public properties, and semi-public institutions in China were taken over by China, as the agreements by virtue of which Germany acquired these holdings went by the board with the treaties. Tsingtao was the only exception, and this exception was made for the sole reason that Japan was firmly seated there, occupying, on the basis of a Treaty wrung from China as a result of a threat of war, territory which should have automatically reverted to China by virtue of her declaration of war alone. Possession in this case was ten points of the law. When China became a belligerent it appeared to everyone in China that the future settlement of the disposition of Kiaochow lay between Germany and China, and not between Germany and Japan, and that China's pledge to abide by a decision reached between Germany and Japan was no longer effective.

Japan apparently observed the weakness of her position and in September, 1918, when through the instrumentality of the military leaders, she had virtually gained complete control of the Peking Government, she negotiated a secret agreement, endorsed by China upon the responsibility of Tsao Ju-lin alone, without the knowledge of Parliament or the concurrence of the Cabinet, by virtue of which she came into possession of Germany's former claim upon projected Shantung railways. In exchange for this the northern militarists were provided with Yen 20,000,000 to play with.



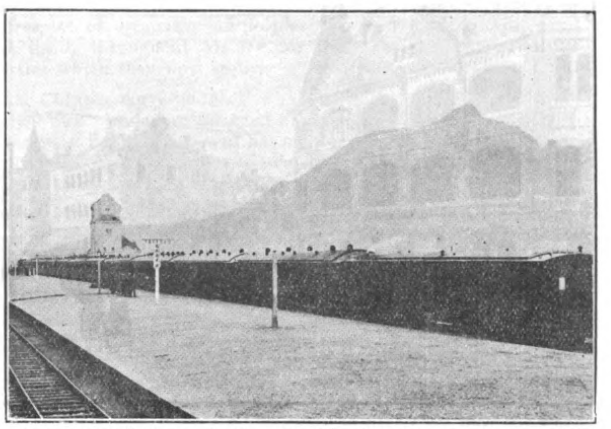
CHUFU STATION (TIENTSIN-PUKOW RAILWAY) NEAR CONFUCIUS' TOMB, SHANTUNG. THE CARTS IN THE FOREGROUND ARE TYPICAL OF THOSE USED FOR TRAVEL IN THE REGION

This was the status of the Shantung question when it came before the Peace Conference. Japan was armed with five treaties and agreements, two from China, one obtained as a result of an ultimatum, and the other from an official without adequate authority, and three from Great Britain, France and Italy respectively, made with these belligerents when their case was desperate and when Japan's possible defection might have meant disaster. Faced with these documents, the representatives of the greater nations at the conference, instead of ignoring or tearing up the documents, gave Japan's claims the following consideration in the final draft of the terms submitted to Germany:

> "Germany cedes to Japan all rights, titles and privileges, notably as to Kiaochow, and the railroads, mines and cables acquired by her treaty with China of 6th March, 1898, and by other agreements as to Shantung.
>
> "All German rights to the railroad from Tsingtao to Tsinanfu, including all facilities and mining rights and rights of exploitation, pass equally to Japan and the cables from Tsingtao to Shanghai and Chefoo, the cables free of all charges, all German State Property, movable and immovable, in Kiaochow is acquired by Japan free of all charges."

A Wail of Despair

The public statement issued by the Chinese Delegation to the Peace Conference is a wail of despair and at the same time an acknowledgement of submission to that infernal fiend Policy,



TAIAN STATION (TIENTSIN-PUKOW RAILWAY), SHANTUNG, WITH THE FAMOUS SACRED MOUNTAIN, TAISHAN, IN THE BACKGROUND

whom we all thought dead, which deserves to be put on permanent record. The following is the text as given out in Paris on May 1, 1919:—

> The Chinese delegates to the Peace Conference issued a statement on Friday afternoon with regard to the decision of the Council of Three concerning Kiaochow. The statement says:

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* In the Treaties made on May 25, 1915, as a result of the Twenty-One Demands and the consequent Ultimatum, between Japan and China, China agreed with regard to Shantung as follows:—

Article 1.—The Chinese Government agrees to give full assent to all matters upon which the Japanese Government may hereafter agree with the German Government relating to the disposition of all rights, interests and concessions which Germany, by virtue of treaties or otherwise, possesses in relation to the Province of Shantung.

Article 2.—The Chinese Government agrees that as regards the railway to be built by China herself from Chefoo or Lungkow to connect with the Kiaochow-Tsinanfu railway, if Germany abandons the privilege of financing the Chefoo-Weihsien line, China will approach Japanese capitalists to negotiate for a loan.

Article 3.—The Chinese Government agrees in the interest of trade and for the residence of foreigners, to open by China herself as soon as possible certain suitable places in the Province of Shantung as Commercial Ports.

Article 4.—The present treaty shall come into force on the day of its signature.

In an Exchange of Notes attached to the Treaty the following points were agreed upon:—

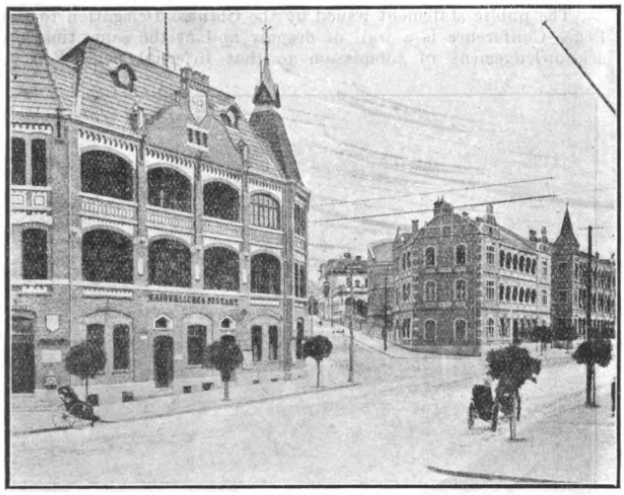
Within the Province of Shantung or along its coast no territory or island will be leased or ceded to any foreign Power under any pretext.

The places which ought to be opened as commercial ports by China herself, as provided in Article 3 of the Treaty respecting the province of Shantung signed this day, will be selected and the regulations therefor, will be drawn up by the Chinese Government itself, a decision concerning which will be made after consulting the Minister of Japan.

When, after the termination of the present war, the leased territory of Kiaochow Bay is completely left to the free disposal of Japan, the Japanese Government will restore the said leased territory to China under the following conditions:—

(1) The whole of Kiaochow Bay to be opened as a commercial port.
(2) A concession under the exclusive jurisdiction of Japan to be established at a place designated by the Japanese Government.
(3) If the foreign Powers desire it, an international concession may be established.
(4) As regards the disposal to be made of the buildings and properties of Germany and the conditions and procedure relating thereto, the Japanese Government and the Chinese Government shall arrange the matter by mutual agreement before the restoration.

"The Chinese delegates have been informed orally, on behalf of the Council of Three, of the outline of the settlement proposed regarding the Shantung question. Under this settlement the rights to Kiaochow formerly belonging to Ger-



TYPES OF TSINGTAO BUILDINGS—POST OFFICE IN FOREGROUND

many are transferred to Japan. While Japan voluntarily engages to hand back the Shantung peninsula in full sovereignty to China she is allowed to retain the economic privileges formerly enjoyed by Germany. These privileges, the delegation is informed, include the Tsingtao-Tsinan Railway, 280 miles long, the mines connected with it and the two railways to be built connecting Shantung with the two trunk lines from Peking to the Yangtze valley. In addition she obtains the rights to establish a settlement at Tsingtao, and although the Japanese military forces, it was understood, will be withdrawn from Shantung at the earliest possible moment, the employment of special railway police is permitted."

"Such being the outline of the proposed settlement, the Chinese delegation cannot but view it with disappointment and dissatisfaction. Their German rights in Shantung originated in an act of wanton aggression in 1897, characteristic of Prussian militarism. To transfer these rights to Japan as the Council of Three proposes to do, is therefore to confirm an act of aggression which has been resented by the Chinese ever since its perpetration. Such virtual substitution of Japan for Germany in Shantung is serious enough in itself but it becomes grave when the position of Japan in Southern Manchuria and Eastern Mongolia is read in connection with it. Firmly entrenched on both sides of the Gulf of Pechili, the water outlet of Peking, with a hold on the three trunk lines from Peking and connecting it with the rest of China, the capital becomes but an enclave in the midst of Japanese influence. Moreover owing to China's declaration of war against the Central Powers on August 14th, 1917, and the abrogation of all treaties and agreements between China and these Powers, the German rights automatically reverted to China. The declaration was officially given notice of and taken cognisance of by the Allied and Associated Governments. It is therefore significant that the Council in announcing the settlement of the Kiaochow and Shantung question referred to the rights to be transferred to Japan as the 'rights formerly belonging to Germany.' It appears clear then that the Council has been bestowing on Japan the rights not of Germany but of China; not of an enemy but of a weaker ally.

"Besides Shantung is China's holy land, packed with memories of Confucius and Mencius and hallowed as the cradle of her civilization. If it is the intention of the Council to restore it to China it is difficult to see on what consideration of principle or of expediency can be justified the transfer in the first instance to an alien Power which then 'voluntarily engages' to hand it back to the rightful owner. Japan based its claim for the German rights in Shantung also on the Treaty and Notes of 1915 and the notes of 1918 with China. It is to be noted, however, that the documents of 1915 were agreed to by China under the coercion of an ultimatum threatening war in case of non-compliance with the Twenty-one Demands. The Notes of 1918 were made by China as the price for Japan's promise to withdraw her troops, whose presence in the interior of Shantung, as well as the establishment of Japan's civil administration bureaux, had aroused such popular opposition that the Chinese Government felt constrained to make the arrangement.

"The Chinese delegation understands that the Council is prompted by the fact that Great Britain and France had undertaken in February and March, 1917, to support at the Peace Conference the assuring to Japan of German rights in Shantung.

"To none of these secret agreements was China a party, nor was she informed of their contents when invited to join in the war against the Central Empires. The fortunes of China appear thus to have been made the objects of negotiations and compensation after she had allied herself with the Allied Powers.

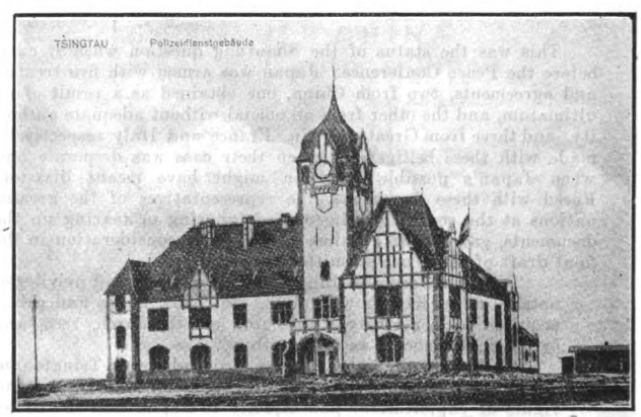
"Apart from this, it is at least open to question how far these agreements will be applicable inasmuch as China has become a belligerent. The claims of Japan referred to in this agreement appear to be scarcely compatible with the fourteen points adopted by the Powers associated against Germany.

"If the Council has granted the claims of Japan in full for the purpose of saving the League of Nations, as is intimated to be the case, China has less to complain of, believing, as she does, that it is a duty to make sacrifices for such a noble cause. She, however, cannot refrain from remarking that the Council has not seen fit to call upon strong Japan to forego her claims, animated by a desire for aggrandisement, instead of on weak China to surrender what is hers by rights.

"Great will be the disappointment and disillusion of the Chinese people whoever proposed the settlement. If there is a reason for the Council to stand firm on the question of Fiume there would seem to be all the more reason to uphold the claim of China relating to Shantung, which includes the future welfare of 36 million souls and the highest interests of peace in the Far East."

China Sacrificed for the Sake of League

Policy in Paris has inflicted a hardship upon China which we in China, who are sick of policy and do not mind saying it, know could not have been worse had the Conference decided to return Tsingtao to Prussia and to give that power *carte blanche* in dealing with China. The Chinese and the foreign residents in China know that the interpretation of Japan's economic rights in Shantung will not lie with the Chinese, and, unless a phenomenal change takes place in Japanese character, they know that



POLICE HEADQUARTERS UNDER GERMAN ADMINISTRATION—TSINGTAO

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Projected line to Haichow.—A further survey has been made between Hsuchowfu, on the railway between Tientsin and Pukow, and Haichow on the sea coast, with the object of finding a suitable route for the projected continuation of the line now operating between Hsuchowfu, and Mienchen, westwards of Honanfu, and known as the Lung-hai Railway. Previous surveys proved unsatisfactory owing to the low lying nature of much of the country traversed, and the survey recently completed was undertaken on a route further north to take advantage of the higher land along the Shantung border. If this line is built, as called for in the original contract with the Belgians, a seaport will be created at Haichow. The original object was to secure a further seaport on the coast and develop it to be a worthy terminal of what will sometime be the longest railway traversing China from east to west.

Raising the Tsin-pu Line.—In order to avoid interruption to train services on the northern section of the Tientsin-Pukow Railway by possible floods, as occurred during the great flood at Tientsin, a considerable length of new embankment is being made much higher than the existing one, southward from the Tientsin West station. The earthwork is already practically completed, and the necessary stone work is now being carried out.

Equipment for Manila R. R. Co.—The Manila Railroad Company has received 60 freight cars of the 200 under order. Ten modern locomotives are also ready for shipment. Within two months, as a result of the additional equipment, the freight now waiting transportation will have been taken care of, while the new cars will be sufficient to insure that the road will be able promptly to handle all future demands for a considerable time to come. The cars, which are of modern design in every particular, are all of the 28-ton type, equal to the largest now on service on the road, and far exceeding the average car capacity, which is from seven to 10½ tons. Half of the 200 cars are box cars, while the remainder are flat cars. General Manager Westerhouse has also announced that plans for 25 new open passenger coaches for third-class traffic, which have not previously been submitted for tenders owing to the fact that war conditions made prices exorbitant and deliveries uncertain, have now been turned over to the road's board of directors for approval, and tenders on them will be asked for in the United States in the near future.

Receipts of S.M.R. Co.—The business of the South Manchuria Railway Company during the fiscal year 1918 proved very satisfactory. The total receipts of the company amounted to Y.44,406,500; Y.19,187,676 from passengers, Y.29,953,120 from freights, Y.1,019,335 from warehouses, and the rest from miscellaneous sources. Compared with the returns for the preceding year the amount shows an increase of Y.9,948,582 or 23 per cent.

Receipts of Japanese Government Railways.—The receipts of the Railway Board of Japan during the fiscal year ending in March last amounted to Yen 228,245,000 from traffic and Yen 8,000,000 from other sources, making a gross total of Yen 236,245,000, while the total expenditure amounted to Yen 2,000 million. Thus the net profit for the year amounted to Yen 36,245,000, which exceeds the estimates by about Yen 13,745,000. The increase is principally accounted for by the raising of passenger fares and freight since last summer. Details are as follows:

Revenue.	Y.	Increase over preceding year Y.
Passengers	100,750,000	35,602,000
Freights	107,494,000	20,357,000
Others	8,000,000	
Expenditure.		
Working expenses ...		156,000,000
Payment of interest ...		42,000,000
Subsidy to light railways		1,500,000
Reserve		500,000

Shanghai Tramways.—The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for the month of April, 1919, with figures for the corresponding periods last year:—

	April, 1919.
Gross Receipts	$166,176.68
Loss by currency depreciation ...	41,221.68
Effective Receipts	Mex. $124,955.00
Percentage of loss by currency depreciation	26.02
Car Miles run	360,420
Passengers Carried	7,546,743
	April, 1918.
Gross Receipts	$133,774.35
Loss by currency depreciation ...	30,270.64
Effective Receipts	Mex. $103,503.71
Percentage of loss by currency depreciation	23.96
Car Miles run	334,246
Passengers Carried	6,091,678

Recent weekly figures have been as follows:—

Week Ending:	Effective receipts	Passengers carried
April 30th	$29,590.19	1,795,771
May 7th	31,404.89	1,896,189
May 14th	28,943.71	1,763,446
May 22nd	28,461.30	1,733,826

Receipts of Korean Railway.—The total receipt of the Chosen Railways for the month of March last amounted to Y.1,772,623, comprising Y.1,093,624 from passengers (1,064,073 in number) and Y.678,999 from freights (222,908 tons). The figures show an increase of Y.596,852 or about 30 per cent. as against the returns for the preceding month.

Cable Railway for Kuling.—Work has been commenced on the construction of a cable railway which will link Kuling, the summer resort, with Kiukiang. It is hoped to finish construction in time for service this summer. A passenger car, made of aluminum and holding twelve persons, will make the trip in about twenty minutes. The cable line will run from the rest house at Lienhwatung to Kuling Gap; the remainder of the journey will be made by motor car.

MINING

Mining Leases in Siam.—The Siamese Government issued 80 mining leases in 1918; Australian, French and Danish companies having secured valuable concessions. The completion of the Siamese Southern Railway extension has directed attention to the mineral bearing area the line traverses.

Sino-Japanese Mining Syndicate.—A Sino-Japanese mining syndicate has been formed at Moukden, three-fifths of the capital of a million dollars having been provided by the Japanese. The new company has mining rights covering 5,700 acres in the neighborhood of Liao Yang Hsien, where the iron deposits are reported to be very rich.

Good Coal Seam Opened in Manchuria.—The Hokang Mining Company has opened a coal seam more than 67 miles long at Holikangtzu. The output is now being sold in Harbin, Sansing and other localities, and it is proposed to construct a light railway from the mine to the Sungari, some 47 miles distant.

Japanese Coal Output.—The total output of coal in Kyushu last year was 20,555,278 tons, in quantity showing an increase of 3.4 per cent. and in value showing an increase of 100 per cent. over the preceding year, the total value being Y.206,120,344. Sales were 17,742,724 tons, valued at Y.159,701,621, the value of sales showing an increase of 87 per cent.

Mineral Output in Siam.—The output of Siamese metallic tin in 1918 amounted to 142,000 piculs. Some 12,000 piculs of tungsten ore were recovered in the same period.

Kailan Mining Administration.—Recently weekly figures have been as follows:—

	Output.	Sales.
April 19th	74,946	78,056
April 26th	74,383	92,660
May 3rd	72,194	74,685
May 10th	73,383	66,752
May 17th	74,052	58,695

Seoul Mining Company.—The mills on the Suan Concession treated a total of 18,375 tons of ore during April for a gross production of Yen 216,258.86.

Reported Mining Corporation for Fukien.—It is reported that the Fu Yue Company, a corporation with a capital of about twenty million dollars, is to be organized in Foochow for the development of mines and electrical enterprises in Fukien Province.

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VOL. XV. No. 7

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

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ENGINEERING FINANCE COMMERCE

VOL. XV SHANGHAI, JULY, 1919 No. 7

The Passive Revolution

Peking at last Hears the Voice of the People

Republicanism in China has for seven years been nothing more than a vogue in conversation and in the phraseology of official documents. After the Revolution of 1911, a feud between the elder and younger officials, the official caste learned to use quite a long list of newly coined catch phrases having to do with

TSAO JU-LIN.

Ex-Minister of Communications, who was driven from office by popular clamor as a traitor. He is denounced as being under Japanese influence and one of the prime-movers in the granting to Japan of important concessions.

democracy and in the use of these phrases consisted Chinese democracy. It became fashionable to talk of government by the people and it was solemnly announced in numerous documents that the popular will was sovereign in China. No one read these documents, however, but members of the official caste, and no one who read them really believed that the will of the unwashed would ever manifest itself and intrude upon the comfortable conclaves of the occasionally-washed. Democracy was an imported theory which the cultured member of the official caste had to learn to discuss, but which in his own heart he never seriously considered as applicable to China. It might do well enough in other countries, but the bare suggestion that the masses of the people might keep an eye upon the comings and goings of a high official, might check his receipts and expenditures, and might order him out of office arouses nothing but horror in the conservative Chinese official mind. How many officials during the growth of the recent popular movement have told the leaders of the students, of the merchants, and of other recalcitrant classes, that affairs of government were solely the government's affairs and that the people should go back to their routine of study or trade or labour and let the government take care of its affairs!

And now for the first time in the modern history of China the people have risen in articulate criticism of the Government—or rather of the governing class—have made demands upon it and have frightened the much distressed tradition worshippers into concessions which a month ago they would not have dreamed of making to any organization but an overwhelmingly powerful military coalition. What the politicians and militarists of opposing parties and of a number of southern provinces have been conspiring for and even fighting for over a period of years has been attained in a few weeks, by a handful of schoolboys whose unselfish patriotism has forced admiration from the militarists themselves and has made many of them wish that they were in other company. They have stirred the nation to its first real interest in public affairs and have shaped the nucleus of public opinion about which there is now some hope of building a real Chinese democracy.

Interest in student activities was first aroused by the action of the students in Peking who stormed Tsao Ju-lin's house on May 4 and drove that official and several of his colleagues into hiding. The Peking student movement has more or less led all other movements in China during the ensuing weeks and the relations between this body and the Government has always indicated to the provinces the progress or retrocession of the general movement. Agitation in the Yangtze Valley, in Shanghai, and in Canton are of such common occurrence, and usually run their short courses with such emotional fury and so little evidence of sound policy or organization, that they have nearly discredited themselves and have to be very big indeed to attract the attention of either Chinese officials or of foreigners. With Peking it is different. Peking has a very large and notably efficient police force, augmented by gendarmerie and by some of the best divisions of soldiers in the Chinese army, all under the command of tried retainers of the military dictators, and all as reliable as such organizations well can be. Any group of people contemplating disorder or even mild demonstrations against the Government must take these forces into account, and as they are fully appreciated by the Chinese, any movement in the Capital is regarded as serious and is not set aside as a mere overflow of animal spirits, as it might be in Shanghai or Canton.

In April, fifty-two commercial organizations, controlling a very big percentage of China's big trade, passed resolutions in

Projected Russian Railways in North Manchuria

Text of the Agreement made between the Chinese Government and the Russo-Asiatic Bank for the Construction of Railways between Tsitsihar and Heiheifu, on the Amur River, and between Harbin and Mergen.

In view of possible developments in North Manchuria and the fillip likely to be given to railway construction in the Far East as the result of the termination of the European War, we have decided to publish the agreement made between the Chinese Government and the Russo-Asiatic Bank for the building of a railway between Tsitsihar and the Amur River and between Harbin and Mergen, a project which was described in the FAR EASTERN REVIEW of April, 1916. In subsequent issues we will publish other agreements for projected railways in China which have not so far been published. The projected Russian line is known as the Pin-Hei Line, and the agreement is as follows:—

ARTICLE I.

Contracting Parties.

The present contract is concluded in Peking the twenty-seventh day of March one thousand nine hundred and sixteen, the twenty-seventh day of the third month of the Fifth Year of the Chinese Republic between the Government of the Chinese Republic (hereinafter called "the Chinese Government") represented by His Excellency Mr. Chow Tsz-chi, Minister of Finance, and His Excellency Mr. Liang Tung-yen, Minister of Communications, duly authorised, of the one part, and the Russo-Asiatic Bank (hereinafter called " the Bank "), a Joint-stock Company established in Petrograd, represented by Monsieur L. de Hoyer, duly authorized, of the other part.

ARTICLE II.

Date, Denomination and Amount of Loan.

The Chinese Government authorizes the Bank to issue a gold loan for a nominal amount of Roubles 50,000,000 (fifty million) either at one time or by successive instalments, equivalent to an approximate amount in French francs, Belgian francs, pounds sterling or American dollars, at the option of the Bank.

The product of the issue shall be placed by the Bank to the credit of the Chinese Government in the currency of the market or markets of the issue and for the amount realised on each market. The payment of interest and the repayment of the bonds shall take place in the coin of the issue and in the other places in their respective coin at the rate of exchange of the day. This will be at the charge of the Bank.

The loan will bear the date of the issue of the bonds. It will be called the: *Chinese Government 5 per cent. Gold Loan of 1916 for the Pin-Hei Railway.*

ARTICLE III.

Object of the Loan.

This loan is intended exclusively to furnish the funds necessary for the following purposes:

1. The construction, equipment, and putting in working order of a line which will unite Harbin, or a point situate on the Chinese Eastern Railway near Harbin, to Heiheifu (Sahalian), situate on the Amur River opposite the town of Blagovestchensk, by passing through Mergen, with a branch uniting Mergen and Tsitsihar. The exact route shall be agreed upon between the Director-General, representing the Chinese Government, and the Engineer-in-Chief appointed in conformity with Article XV, who will decline in the interest of the enterprise.

It is agreed that the construction and equipment includes the purchase of necessary land, rolling stock and other installations, as also the work of joining up with the Chinese Eastern Railway in such a manner as to assure an easy and profitable working of the line.

The Chinese Government shall take all steps and assume all charges and indemnities whatsoever necessary to insure the passing of the line through public, Government and Provincial and private property whatsoever in the towns and villages as well as in the country. All sums required for this purpose by the Chinese Government, estimate for which shall be made by the Director-General, shall be placed in its hands and shall be deducted previously from the product of the loan. At the same time the amount of the payments to be made to the Chinese Government under this heading shall be fixed by mutual consent between the Director-General and the Bank and shall be subject to the control of the Engineer-in-Chief in conformity with Article XIII hereunder.

2. To the purchase of the line running from the town of Tsitsihar to the Chinese Eastern Railway and the incorporation of this branch with the present line. The purchase of the line shall be made through the Director-General.

3. To the payment of the interest coupons of the loan as well as the working expenses during the period of construction the duration of which is estimated at five years and shall be definitely fixed after completion of the survey.

Should the construction be completed sooner than anticipated the excess funds thus obtained shall be deposited in the Bank and shall constitute a reserve for the payment of the interest coupons of the present loan, or else for improvements to or repair of the line.

Should the Chinese Government come to an agreement with the Russian Government for uniting by a bridge or ferry service the two banks of the Amur, between Heiheifu and Blagovestchensk, the details of this enterprise shall form the subject of an exchange of letters between the Representatives of the Chinese Government and the Bank, which letters shall ultimately be annexed to this contract.

ARTICLE IV.

Interest on the Loan.

The interest on the present contract shall be calculated at the rate of 5 per cent. (five per cent.) per annum on the nominal amount. It shall be paid half-yearly by the Chinese Government through the Bank to the holders of the bonds. It will be calculated from the date of issue to the public of the said loan and paid under the conditions stipulated above.

ARTICLE V.

Duration and Redemption.

The period of the loan shall be forty-six years. Repayment of the principal shall commence at the expiration of sixteen years calculated from the date of issue to the public subject to the right of prior repayment provided for in Article VI hereunder. It will be made by means of an annual and equal amortisation paid in half each six months to the Bank. These payments shall correspond with the amount specified on the amortisation table annexed to this contract and shall be effected fourteen days before the date upon which they are due established according to the European calendar. The bonds and interest coupons falling due shall be recovered and cancelled by the Bank on presentation. The Bank shall hand them over in good order to the accredited Chinese Ministers in the countries in which payment shall have been effected.

The Bank shall repay to the Chinese Government the amount of every bond or interest coupon which shall not have been presented within thirty years from the date upon which they were re deemable or payable.

When the loan shall have been entirely repaid the present contract shall immediately become nul and void.

ARTICLE VI.

Anticipated Repayment.

After the expiration of sixteen years from the date of the loan the Chinese Government shall have the right to repay at any time and wholly or in part the amount not yet repaid, subject, in case of repayment before the twenty-seventh year, to a premium of 2½ per cent. (two and a half per cent.) upon the nominal value of the bonds on which repayment shall not yet be obligatory by virtue of the table annexed to the present contract, that is to say by paying per bond of one hundred roubles, for example, two roubles and fifty kopecks. On and after the twenty-seventh year repayment may be made without premium.

Each time that the Chinese Government desires to effect any such extraordinary repayment it shall give to the Bank six months' notice in writing.

The extraordinary repayments shall be made by supplementary drawings of bonds which shall take place on the same date as the ordinary drawings, in conformity with the procedure set out in the loan prospectus.

ARTICLE VII.

Service of the Loan.

The Chinese Government undertakes, by these presents, the formal engagement without reserve to pay entirely and promptly the interest and repayment of capital of the loan, in conformity with the table annexed to the present contract.

Further the Chinese Government accords to the holders of the stock of the present loan a special guarantee upon the Pin-Hei Railway.

This special guarantee constitutes a first mortgage upon the line itself, the fixed and rolling stock, dependencies and products. It is accepted by the Bank in the name of the holders of the bonds.

Should the Chinese Government be in arrear with the payment at the date fixed either in the whole or in part of a half-yearly interest or repayment the Bank shall have full power to exercise all the rights arising from this special guarantee according to the laws in force on this subject in the European countries such as Russia, France or England.

During construction the interest shall be paid out of funds deducted from the product of the loan.

After construction is completed the Chinese Government shall deduct the funds necessary for the payment of interest and repayments from the receipts of the railway, should the general revenue be insufficient.

The receipts of the railway shall be paid over to the Bank without delay and placed to a special rouble account of the railway at Harbin or any other branch of the Bank in Northern Manchuria which the Bank may designate.

The Bank shall deduct from these payments the total amount necessary for the service of the loan upon the next two payments. This procedure is in order to insure the necessary provision of gold for this service at least fourteen days before due date.

The half-yearly payments due for interest and repayments shall be paid to the Bank fourteen days before the dates fixed by virtue of the preceding paragraphs.

These payments shall be effected by the Board of Communications to the Bank at Harbin and shall be of an amount sufficient to cover these payments in gold in Europe and in America.

Should, however, the receipts of the railway not be sufficient for the payment of interest and repayment of capital and should the Chinese Government in consequence be obliged to take the necessary funds from its general revenue, these payments shall be effected by the Board of Communications at the Bank in Shanghai or in such place as the Bank may designate, in Shanghai sycee adopted by the Bank or in national currency (when this is in circulation) and shall be of an amount sufficient to cover these payments in gold in Europe and in America.

These payments may, however, be made in Europe should the Chinese Government find that it has at its disposal in Europe *bonâ fide* gold funds not transferred from China for this purpose and which it may desire to use for this purpose.

In repayment of disbursements relative to the payment of interest and repayment of the amount of the loan, the Bank shall receive from the Chinese Governnment a commission of ¼ per cent. (one-quarter per cent.) on the annual service of the loan.

Should in the future any State Bank of China establish a branch in Russia which is not simply a correspondent or foreign agent, this State Bank shall share with the Bank up to a porportion of 50 per cent. (fifty per cent.) the service of the transfer of the funds.

ARTICLE VIII.

Price of Loan to the Chinese Government.

The price of the bonds to be paid by the Bank to the Chinese Government shall be the issue price to the public on the Petrograd market less 6 per cent. (six per cent.) of their nominal value. Should no issue take place in Petrograd the price shall be that obtained upon the other place or places of issue less 6 per cent. (six per cent.) of the nominal value of the bonds. The Bank reserves to itself the right to determine the amounts to be issued on the various markets. When fixing these amounts it shall take into consideration the conditions of these markets.

The Bank shall bear the expenses occasioned by the issue and placement of this loan, such as: Syndicate guarantee, commission and brokerage, telegraphic and postal correspondence charges, engraving and printing of the prospectus and the bonds, stamps and taxes.

The Director-General or the Chinese Ministers in the countries in which the issue shall take place shall be notified in advance of the rate of issue of the loan which shall be as favourable as possible.

ARTICLE IX.

Issue of the Loan.

The Bank is authorized immediately to create the gold bonds representing the total amount or a part only of the loan, and it shall keep them in its possession until the issue of the loan as soon as it shall judge favorable to make it. The Bank is authorized to deliver the bonds to the subscribers in due course in conformity with the prospectus of the loan.

The nominal amount of the bonds shall be fixed by the Bank who may create bonds of various values.

The Bank shall decide the form of the bonds, the language in which they are to be drawn up and the currency in which their value shall be expressed, in conformity with the usage of the countries in which the issues shall be made. It shall give previous notice of same to the Director-General or the Chinese Minister in the countries of the issue.

The Bonds shall bear the fac-simile of the signature and official seal of the Minister of Finance and the Minister of Communications in order to render it unnecessary that they should sign them themselves.

As soon as the bonds have been printed the Chinese Minister in Petrograd or in the other countries where the issue shall take place shall affix to each bond the fac-simile of their official seal and their signature as proof that the issue and sale of these bonds are authorized by the Chinese Government and made in its name and on its account.

The bonds shall be sealed and countersigned by the Bank or its agents in the countries in which issue shall be made.

All the necessary details for the prospectus, or with reference to the payment of interest and the repayment of the capital of the loan, which shall not be explicitly fixed by the present contract shall be settled by the Bank after consultation with the accredited Chinese Ministers in the countries in which issue shall be made.

The Bank is authorized to publish the prospectus of the loan as soon as possible after the signature of the present contract.

The Chinese Government shall give instructions to its accredited representatives in the countries in which issue shall be made, so that they may sign the prospectus of the loan and give their assistance to the Bank in all matters that may require it.

The first series, of which the amount shall not be less than Roubles 10,000,000 (ten millions) or its equivalent in French francs, Belgian francs, pounds sterling or gold dollars, in conformity with Article II, shall be issued as soon as possible after ratification of the present contract. The date of issue of the subsequent series, the which shall not be less than one-fifth of the total amount of the loan, shall be fixed by common consent of the Bank and the Chinese Government in such manner that the work and purchase of material provided for by the present contract shall experience no delay. The Bank may nevertheless issue the entire loan at one time, should it judge expedient so to do, having previously advised the Chinese Government of same, who will consent to it.

The subscription shall be opened by the Bank in Europe, in America should issue be made in this country, and in China on equal terms. Preference shall be given to the subscription of the Chinese Government provided that this subscription shall be remitted to the Bank at least four days before the publication of the prospectus.

The Bank shall give to the Chinese Government seven days' previous notice of the date of the publication of the issue prospectus.

Should the present state of war not have ceased in Europe before the publication of the prospectus for the issue of the loan, or, should in consequence of this crisis the condition of the markets render the issue of the loan impossible, or, again, should a political or financial crisis in China seriously affect the market price of Chinese state stock already in existence, there shall be granted to the Bank a reasonable extension of time for the execution of the present contract. Should the loan not have been issued within the extended time the present contract shall become nul and void.

ARTICLE X.

Lost Bonds.

Should one of the bonds issued for the present loan be lost stolen or destroyed, the Bank shall notify the same to the Minister of Communications as well as the accredited Chinese Minister in the country in which this bond was issued.

The same will authorize the Bank to publish in the papers that payment on this bond has been stopped and to take all steps which may be necessary on this occasion according to the laws and usage of the country.

Should the bond have been destroyed or should the lost or stolen bond not have been recovered within the time fixed by the Bank, the accredited Chinese Minister in the country shall affix his seal to a duplicate of this bond of the same nominal value and shall deliver it to the Bank in its capacity of representative of the owner of the lost stolen or destroyed bond.

The Bank shall pay all expenses on behalf of the owner of the bond.

ARTICLE XI.

Tax Exemption.

All bonds, all coupons and all payments made or received in connection with the service of the present loan shall be exempt from all Chinese taxes or duty during the period of the loan.

ARTICLE XII.

The Bank Trustee.

The Bank may act as trustee for the holders of the bonds of the present loan.

It may undertake to represent them and it shall have the power to act in their name in all the negotiations with the Chinese Government which may be necessary or in all discussions concerning the present loan.

ARTICLE XIII.

Deposit of the Product of the Loan—Accounts of the Railway.

The Bank shall deposit the product of the loan to the credit of an account entitled "Chinese Government 5 per cent. loan 1916 for the Pin-Hei Railway," which shall be opened by the Bank in Europe and in America should a part of the issue be placed in this country.

The product of the loan shall be deposited to the credit of this account by successive payments in conformity with the terms granted to the subscribers of the loan.

The credit balance of this account shall bear interest to the profit of the Chinese Government at the rate of 3 per cent. (three per cent.) per annum. As to the sums transferred to China and not yet used they shall bear interest at the best rates granted by the Bank on ordinary deposits.

The Bank shall hold at the disposal of the Director-General the net product of the loan plus the current interest, taking care, however, to reserve the sum necessary for the payment of the interest coupons and the Bank's commission on these coupons during the construction of the line, which period is estimated at five years, but which shall be fixed definitely after completion of the survey. A sufficient sum shall also be left in Europe and in America, if issue has been made in that country, for all payments of material and staff.

Should he so desire the Director-General may transfer the funds of the loan to China after previous agreement with the Bank on this subject. The transfers effected in the course of one week may not exceed £75,000 sterling (seventy-five thousand pounds sterling) without the consent of the Bank.

The transfers shall be effected through the Bank and their amount shall be deposited to the credit of a "Pin-Hei Railway" account at Harbin, the Bank being responsible for same.

In conformity with the estimate drawn up by the Engineer-in-Chief for the expenditure to be made in China during the following month or months, the Director-General shall decide the amount of the sum to be deducted for this purpose, which amount shall be deposited to the credit of a construction rouble account, an account which shall be opened by the Bank at Harbin or such other branch of the Bank in North Manchuria as it may designate.

This transfer from the Pin-Hei Railway account to the construction account shall be made by the Director-General through the Bank. He may not take sums required during more than one month except with the consent of the Bank. The construction account will bear interest at the rate fixed in conformity with the rules in force for this class of current accounts.

Withdrawals from this construction account shall be made in amounts sufficient to meet expenses as the line advances by cheques on the Bank, which cheques shall be conjointly signed by the Director-General and Engineer-in-Chief.

The amount of these cheques shall be paid over to an agent designated by the Director-General against a receipt from the agent and on the responsibility of the Director-General. This agent shall not part with these funds except on a requisition signed conjointly by the Director-General and the Engineer-in-Chief. The Director-General and the Engineer-in-Chief shall have the most absolute right of control over all the expenses and receipts of the railway.

During the period of the loan the accounts of the railway shall be kept in Chinese and in Russian in conformity with the modern methods applied in connection with the Chinese railways constructed with the help of foreign capital and under the direction of a Russian Chief Accountant engaged by common consent of the Director-General and the Bank and placed under the orders of the Engineer-in-Chief. The Chief Accountant shall draw up an organization chart of the European staff which he estimates as necessary for the good working of this department and submit it, through the Engineer-in-Chief, for the approval of the Director-General. The Director-General reserves to himself the right to choose and engage the Chinese staff required by the Chief Accountant and to place it under the orders of the latter.

The management of the railway shall publish annually, at the close of the year, a report in Chinese, Russian and French showing the receipts and expenditures of the working of the railway. The public may have access to this report on request.

ARTICLE XIV.

Contingent Deficit or Excess.

Should the product of the loan augmented by the interest on same not be sufficient to complete the construction and equipment of the railway, the Bank shall issue a new series of the loan for the amount necessary to complete the line and put it in working order on giving previous notice of same to the Chinese Government. The interest on this new series as well as the price shall be the same as in the case of the present loan.

Nevertheless should the Chinese Government have *bonâ fide* funds available, these funds may be used for the continuation without interruption of the construction work. These funds shall be considered as forming part of the capital of the railway, but the dividends to which this capital shall be entitled may not in any way affect the stipulations which insure the payment of interest and repayment of the capital of the present loan.

Should any excess funds not utilized be available, after the achievement of the complete equipment of the railway, this excess shall be deposited with the Bank and shall constitute a reserve for the payments with which the Chinese Government is charged by virtue of the present contract, or again for improvements or repairs to the line.

ARTICLE XV.

Construction.

The survey in connection with the construction of the line shall be commenced with the least possible delay after the signature of the contract and the work commenced directly after the issue of the loan.

The length of the line shall be definitely fixed after the termination of the survey.

The gauge of the line shall be the same as that of the Chinese Eastern Railway.

The Chinese Government shall nominate a Director-General of the line. This official shall reside permanently in the immediate neighborhood of the work. He shall have full powers to act in the name and for the account of the Chinese Government within the limits of the present contract. The Engineer-in-Chief shall take instructions from him, or during his absence, from his duly authorized representative. The remuneration of the Director-General shall be fixed by the Chinese Government in agreement with the Bank and shall be at the charge of the railway.

The work of construction of the line shall be done under the chief management of the Director-General.

The Director-General and the Bank shall conscientiously and unanimously make choice of the Engineer-in-Chief who must be Russian, experienced, and honest.

The Engineer-in-Chief shall control the survey, plans, tracings, and specifications of the line, direct the execution of all the work, and order the supplies, tools, and material necessary to insure regular working. However, all these operations shall be submitted in the first place for the approval of the Director-General.

The Director-General shall fix the remuneration of the Engineer-in-Chief after agreement with the Bank.

The Engineer-in-Chief shall draw up an organization chart of the European staff necessary for the construction and shall submit it for the approval of the Director-General. This staff, which will include the Chief Accountant, the heads of the various departments, the section heads, etc., shall be engaged by the Bank who will place them under the orders of the Engineer-in-Chief.

As regards the Chinese staff, technical or otherwise, the Director-General reserves to himself the right to select same. He will place it under the orders of the Engineer-in-Chief. No Chinese or European employee may be engaged without the consent of the Director-General.

It is agreed that Chinese subjects having made special study or having acquired sufficient practical knowledge may be introduced by the Director-General to the Engineer-in-Chief who shall employ them on the same terms as the European employees, but it shall be necessary to send them in the first place to the Engineer-in-Chief who, assisted by the technical representative of the Director-General, shall examine their capabilities.

For a grave fault the Director-General may exact the dismissal of the non-technical staff: in that which concerns the technical staff and all the European staff, the Director-General may demand the dismissal of same by the Engineer-in-Chief, who must comply with the request should the reason given be recognized as sufficient.

For the recall or dismissal of the Engineer-in-Chief the previous agreement of the Director-General and the Bank is necessary.

Members of the European staff shall in a general way give the greatest consideration to the Director-General and his special representatives. They shall respect the local authorities and not mix themselves up with the affairs of the country. They shall also respect the Chinese manners and customs so as to live in harmony with the inhabitants.

The intention of the contracting parties in inserting the preceding stipulations is to safeguard the prestige of the Director-General and to insure the regular continuation of the work.

The Director-General also reserves to himself the right, in agreement with the Bank, to delegate to the work one or several Special Representatives furnished with full power. The remuneration of the representatives shall be incumbent upon the railway.

The Bank undertakes to come to an agreement with the Chinese Eastern Railway with a view to a special tariff of 50 per cent. (fifty per cent.) reduction on the ordinary tariff for the transport by this line of the construction material for the Pin-Hei Railway. This advantage shall not, however, extend to the Eastern Chinese line comprised between the station Kwanchense and Harbin.

ARTICLE XVI.

Supplies.

During the period of construction the Bank shall act as agent of the Railway for the purchase of all material and merchandise, utensils and raw material for use in the construction of material in China which may be imported from abroad.

With the object of encouraging Chinese industry, price and quality being equal, preference shall be given to Chinese supplies, and material manufactured in China, to the detriment of foreign supplies. No commission shall be paid on purchases of Chinese material or merchandise.

In the case of all orders and all purchases made abroad the Bank shall buy in the open market with the object of securing the most favourable terms, especially those in connection with quality and price. Conditions being equal supplies of Russian origin shall be given the preference should the Engineer-in-Chief recommend them to the Director-General, otherwise in a general way supplies of Russian origin or from the countries in which an issue of the loan shall be made shall be placed upon an equal footing and shall enjoy a preference on equal terms over the supplies of other foreign origin. The orders as well as the adjudication of the work shall be checked by the Engineer-in-Chief and submitted for the approval of the Director-General.

The accounts of moneys paid for supplies for material and costs of all kinds incurred in Europe shall be sent, together with all justificatory documents every three months to the General Management for approval. The Bank will add to the original net cost of the supplies purchased in Europe and in America a commission of 5 per cent. (five per cent.) as remuneration for its services as agent.

All orders placed by the Bank for the railway shall be exempt from all customs duty, taxes, and likin on their entrance into or passage through Chinese territory.

Nevertheless this stipulation does not impair the right of the Chinese Government to attach if desired the orders with such future duties as may be placed on those destined for the construction and equipment of all the other railways of the country without distinction.

ARTICLE XVII.

Working of the Line during Construction.

As the various sections of the line are finished the Director-General and the Engineer-in-Chief shall entrust the working of the section or sections to a Russian Traffic Manager, who shall be engaged by common consent of the Director-General and the Bank and placed under the orders of the Engineer-in-Chief. They will in general take mutually the steps necessary for their working.

ARTICLE XVIII.

Future Branches and Extensions.

Should the Chinese Government deem it necessary or desirable to construct branch lines connected with this railway or to lengthen this line it shall do so with its own money, *i.e.*, out of funds of *bonâ fide* Chinese origin.

Should it desire to call in foreign capital it undertakes to give preference to an agreement with the Bank and to give it the option of the contracts in connection with this enterprise, on the same terms as those which may be offered by other foreign Banks or Companies.

ARTICLE XIX.

Final Working of the Line.

The working and administration of the railway shall be under the head management of the Director-General.

When the construction of the railway shall be entirely finished the work of the Engineer-in-Chief shall be considered as terminated, and the Director-General shall in conjunction with the Bank engage a Russian engineer who shall be charged with the working of the railway as well as the upkeep of the line, material and dependencies. This Engineer will take orders from the Director-General, or, in his absence, from his duly authorised representative. The Director-General shall fix the terms of his engagement.

The Engineer-in-Chief, together with the Director-General, shall engage the necessary European staff, such as the Traffic Superintendent, Superintendent of the Line and Works, Traction Superintendent, and Superintendent of the Working of the Railway.

For the recall or dismissal of the head of a department the previous agreement of the Director-General and the Bank is necessary.

All receipts and expenses shall be regularly placed to the account of the railway at the Russo-Asiatic Bank, the interest on this account being fixed at the most favourable rate given by the Bank on sight or fixed deposits as the case may be.

All expenses for the working of the railway and maintenance of the line shall be paid out of the various products and receipts of the railway, after which the net profits shall be applied in the first place to the service of the present loan.

Should, after payment of these expenses and after provision having been made for payment of interest on the bonds and repayment of capital as provided for in the amortisation table annexed to the present contract, there remain any unused fund or funds available for other purposes, the same shall be placed at the disposal of the Chinese Government.

The Chief General Accountant who shall be of Russian nationality shall be appointed by the Director-General in conjunction with the Engineer-in-Chief. He shall sign conjointly with the representative of the Director-General all cheques and documents of any kind connected with the accounts.

The representative of the Director-General and the Engineer-in-Chief shall have right to the most absolute control of the receipts and expenses of the line.

Each time that it may be necessary to appoint technical agents of the railway or define their functions or else decide upon their dismissal, the Director-General shall consult the Engineer-in-Chief and act in agreement with him.

In case of disagreement between the Engineer-in-Chief and the Director-General the matter shall be submitted to the Board of Communications who shall decide the question without appeal.

The guarding of the railway shall be secured by a force of Chinese police, commanded by Chinese officers, whose wages and upkeep shall be entirely at the charge of the railway as part of its own expenses for construction and maintenance. The number of the guard shall be fixed by the Director-General in agreement with the Bank.

Should the protection of the railway necessitate the employment of other military forces belonging either to the Chinese Central Government or the Provincial Government, this protection shall be asked for by the railway and promptly accorded. The said military forces shall then be maintained at the expense of the Chinese Central Government or the Provincial Government.

In case of war with any nation or a revolution in China the transport of troops, munitions and supplies for the Chinese Army shall take precedence over all other commercial transport. It shall be done in conformity with the instructions of the Director-General. Further the transport of anything which may be prejudicial to the Chinese Government shall be forbidden.

Supplies.

It is agreed and convened that after completion of the construction of the line, the Bank shall have right of preference to act as agent during the period of the loan in all that which concerns the supply of material or anything required in the manufacture of material that the management of the railway may require on terms which are to be agreed upon later by common consent. These terms may not be more advantageous for the Bank than those stipulated for in Article XVI.

Should there be question of employing one or several foreign firms as agents for ordering any supplies for the working of the line, the Bank shall, conditions being equal, have preference over others.

ARTICLE XX.

Right of Assignment, Substitution and Transfer.

The Bank may designate one or several Banks in China or abroad to carry out conjointly with it or in its stead all or part of the financial functions with which it is charged by virture of the present contract.

The Bank shall have the right, with reservation of all the engagements entered into under the present contract, to transfer or delegate all or part of its rights, powers and benefits to any other Company or Group, or to agents or administrators, with powers of substitution in whole or in part.

It is agreed that these Companies or Groups delegated or substituted by application of the preceding paragraph shall be of Russian nationality and that these transfer of rights shall be subject to the approval of the Minister of Communications.

ARTICLE XXI.

Arbitration.

In the event of confliction or divergence of views between the Bank or its assigns and the Directorate-General on the subject of the present contract, these conflictions or divergencies of view shall be submitted to the decision of two arbitrators, one chosen by the Chinese Government and the other by the Bank. In case of disagreement the two arbitrators shall designate a third arbitrator who shall decide the matter without appeal.

ARTICLE XXII.

Executory Formulæ.

The present contract shall be sanctioned by Presidential Edict.

The promulgation of the Edict shall be officially confirmed without delay by the Waichiaopu to His Excellency the Russian Minister in Peking.

It is made in quadruplicate each containing the French and the Chinese text: two copies shall be retained by the Chinese Government and two by the Bank.

In case of doubt or difference concerning the interpretation of the present contract the French text only shall be taken as evidence.

Peking the twenty-seventh day of March, one thousand nine hundred and sixteen, twenty-seventh day of the third month of the Fifth year of the Republic.

THE MINISTER OF FINANCE,
(Sgd.) CHOW TSZ-CHI,
(Seal of the Board of Finance.)

THE MINISTER OF COMMUNICATIONS,
(Sgd.) LIANG TUNG-YEN,
(Seal of the Board of Communications.)

THE RUSSO-ASIATIC BANK,
27th March, 1916.
(Sgd.) L. DE HOYER.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Kowloon-Canton Railway.—The Hongkong Blue Book for 1918 proves that the Kowloon-Canton line continues to more than pay its way. In 1918 there was an excess of earnings over expenditure of $77,053.36, local currency.

East Coast Railway to Build Bridge.—The largest bridge which has ever been built in Malaya, consisting of five spans, each of 250-ft., and five spans each of 150-ft., making a total length of 2,000-ft., is to be built over the Kelantan River on the East Coast Railway.

The Lunghai Railway.—It is reported in Peking from Honan that surveys on the western extension of the Lunghai Railway, a Belgium contract, have recently been conducted by Japanese engineers, employees of Okura & Company, on the highway between Kuan-yin-t'ang, the present railway terminus, and Shanchow. The local Chinese gentry have been very eager to have the Belgian engineers resume work, but as most of the capital provided by the Belgian loan was squandered during Yuan Shih-kai's monarchical movement there have been no funds, and it has been found difficult to finance the work. It is, therefore, believed in Honan that Okura & Company have agreed to advance the Belgian contractors sufficient to go on with construction in the immediate future and that in return for such advances contracts for the supply of material, and for all of the work but the structural steel work on railway bridges, will be given to the Japanese firm.

Locomotives for S.M.R.—Twenty-five Mikado type locomotives, ordered from the United States, are now being operated on the S.M.R. Co., Manchuria Lines. It is reported tha twenty-five more locomotives for freight service and six locomotives for passenger service have been ordered from the United States, and will arrive in August, September, and October. The Mikado type locomotives already received have four pairs of wheels, and this makes them rather heavy for eighty pound rails, but the other locomotives have each five pair of wheels and may be run with safety over rails of eighty pounds or even less. It is also reported that eighty goods cars and seventy-eight passenger cars have been orderd.

Congestion on the S.M.R.—The congestion of cargoes at the S.M.R. Co. Manchuria line has gradually decreased since April, and on April 26 there were 605,900 tons of cargoes awaiting shipments along the lines. At the present rate of shipment, the congestion will be cleared by September.

There are at present the following amounts of cargoes awaiting shipment :—

	Tons
Fushun	17,910
Kungchuling	67,300
Tiehling	16,502
Fanchiatun	31,890
Kaiyuan	72,914
Changchun	21,863
Ssupingkai	31,057

Tram Company to Build Cars in Shanghai.—The Shanghai Tramways Company will henceforth build its own tram cars in Shanghai, according to plans which have been already put under way. A new factory building will be erected as an extension of the Wayside sheds, which will cover an area of one acre. The present construction program includes the building of 15 tramcars of the regular type and 7 of the railless variety.

S.M.R. Traffic Returns.—The South Manchuria Railway traffic returns for the month of May show a further continuation of the extraordinary prosperity with which the Company has been favored during the recent years without a reverse. The particulars were as under :—

Passengers	Y. 996,548
Goods	3,436,560
Warehouse	105,939
Miscellaneous	222,035
Total	Y.4,761,082

The daily average was Y.153,583, being an increase by Y.37,672, over the corresponding period of last year. The monthly increase for April over the same month of last year being Y.845,259, the total increase for April and May reached Y.2,013,103.

Japanese Railway Returns.—The total receipts of the Railway Board of Japan during the month of April last amounted to Y.25,950,378, showing an increase of Y.6,616,941 as against the returns for the same month of last year. Of the amount Y.15,369,939 were from passengers, 37,628,405 in number, and Y.10,580,439 from freights amounting to 4,933,532 tons in weight.

South Manchuria Railway Debentures.—The South Manchuria Railway Company has announced its sale of new debentures worth Y.20,000,000 and carrying an interest of 6 per cent. per annum. The maturity of the new debentures is 15 years, but the repayment will be started after the fifth year from the date of the new debentures at the rate of Y.300,000 or upwards annually. The net price offered is 93.5 per cent. The sale starts June 23, the lists being closed June 28. The payment of the whole amount is called up July 21.

Electric Railway to Miyanoshita.—The electric railway which has been in course of construction for some time past between Yumoto and Gora, via Miyanoshita, Japan, has now been opened for traffic. The line is five miles in length and climbs to 1,800-ft. along the sides of the mountain and across ravines. The cars, which weigh 35 tons each and accommodate 50 passengers each, are fitted with four forms of brakes—according to a correspondent of the "Japan Chronicle"—electric, magnetic, air, and hand. The railway cost, to build and equip, some Y.3,000,000. It now gives easy access to Miyanoshita, which hitherto could only be reached by a steep though picturesque road.

Chinese Eastern Railway.—The threatened strike on the Chinese Eastern Railway was averted by the granting of an increase of wages by amounts varying from 30 to 300 per cent., retrospective to March. Fares and freights have been increased to meet the additional expenditure.

MINING

Suzuki Would Buy Kyushu Mines.—Suzuki & Company of Kobe are endeavoring to buy several coal mines in Kyushu. The Company already has two mines, one of which can turn out about 20,000 tons per month, and is now reported to be negotiating for the purchase of others. These are to be amalgamated as one concern called the Imperial Coal Company, with a capital of Y.10,000,000. Of the Y.10,000,000, Y.7,500,000 is to be paid up immediately.

Japanese Mineral Production.—According to investigations made by the Department of Agriculture and Commerce the output of gold and other minerals produced in Japan during the month of March showed some decrease as against the returns for the same month of last year, an increase of 3.3 per cent. being witnessed in coal alone. The particulars are as follows :

	March	
Gold	159,020	momme
Silver	3,671,051	,,
Copper	11,114,306	kin
Iron	4,832	French tons
Coal	2,283,697	,,
Kerosene oil	156,800	koku
Sulphur	3,383	French tons

	Jan.-March	
Gold	487,895	momme
Silver	10,242,141	,,
Copper	31,045,990	kin
Iron	17,116	French tons
Coal	6,204,953	,,
Kerosene oil	457,580	koku
Sulphur	8,630	French tons

Output of Coal in Ural Region.—A Japanese newspaper reports that the output of coal in the principal producing centres in the Ural region during last May were as under :—

	poods
Cheliabinsk region	3,400,000
Kizelo-Lounievsky	1,317,000
Bogoslovsky	1,200,000
Egorshinsky	300,000

Compared with the first few months of the current year, the outputs of all these regions are on

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THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

遠東時報

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Buddhist Gate, Nankou

step will inevitably capture the lion's share of this hugely increased trade. What prospect promises more for the financial power of Japan and the comfort of her people? Would England be the commercial centre of the world if Europe were a wilderness? Japan will become to Asia what England is to Europe when the Chinese produce and buy to the same extent as the French, German and Scandinavian peoples. Why should State strategy ignore this great potential resource which inheres in the Chinese millions?

But no people was ever highly developed against its will. "You can lead a horse to water but you cannot make him drink," says the adage. "Yez may sind a bye t' college but yez can't make him think," adds Mr. Dooley. No country has developed industrially upon slavery. No country has become wealthy upon serfdom. Slavery profits neither master nor slave, because under the conditions of slavery production exceeds but very little the life necessities of the slave. There may be a few wealthy slave owners in such a land. There may be great land holders, but the country as a whole remains poor. No country becomes wealthy unless a large percentage of the population possesses comparatively large quantities of desirable goods. A few families, no matter how wealthy, can never consume nor purchase any quantity of goods compared with millions of common people that have a slight margin of comfort.

Requirements to Produce Prosperity.

It has been possible at times to plan a program of production for a people and so organize them upon the task that great national wealth has been produced. Such was the course of Germany. To a degree such is the course of Japan. But the people organized were their own people, not alien nationalities. And then the policy has been successful only to the degree in which it made the people feel that their welfare was to be increased by the program. The loyalty of the German working class to the program was purchased by Bismark by means of the most advanced social measures in any country of the world. In Japan improved wages have been sufficient for a time, but no longer so, as witness the great demonstrations for the extension of the suffrage and the rights of assembly and petition. No people will exert itself to produce largely unless the fruits of such efforts are secured for themselves. Wherever extortionate taxation, insecurity from robbers or covetous officials, discriminatory customs or transit dues, or laws that make the processes of production tedious, uncertain or vexatious prevent a people from keeping to themselves the large part of their product, they do not try to improve their lot. A bare subsistence suffices. Governed by wise and kindly rulers and given a desirable wage many peoples will work with sufficient energy to produce a comfortable condition of life. But no country makes the maximum progress until a large proportion of its population individually puts its attention upon improved methods, elimination of waste, harnessing of natural forces, short cuts in production, and the increase of output per person. Improvement alone begets the desire for improvement. The fabulous wealth of America has been produced in 150 years of unprecedented freedom and low taxes. Russia with the same natural resources, the same vigor of mind and body, has little more to show at the end of this period than she had in the beginning. The Philippines after four hundred years of Spanish rule were in a condition little better than savagery so far as material advantages were concerned. After a bare twenty years of liberal American protection and guidance they have an import and export trade amounting to $233,793,694 U.S. currency per annum, are almost ready to take over their own destiny, and their credit is sufficient for the American Government to entrust to them the full control of the huge investments which have been made in public and private enterprises. Only a people who have the assurance of fulfilling their own destiny and of enjoying the full fruits of their ingenuity and energy will push on into these advanced phases of industry. Such assurances are impossible if the governing powers are feared and hated.

China's Fear of Bondage.

Have the Chinese people the inherent capacity of development to the same degree as the American or the Filipino? A categorical reply is not persuasive. Is physical endurance the test? The Chinese porter counts as a regular day's work a picul carried 100 li (133 pounds carried 30 miles). Is it artizanry? Chinese carvings and tapestry designs attest the cunning of the Chinese hand and eye. Commercial acumen? Chinese merchants out-trade the Jews. Industriousness? Behold the infinite labors of the Chinese farmer. A people who built the Great Wall and the Grand Canal surely possess some genius for organization. When they have struck the stride of modern science and business organization we shall see similar large undertakings in modern institutions devised and executed purely by Chinese.

While they are learning the peculiarities of this modern scientific and business "goose-step," the Chinese would be willing to hire from abroad all the technical and organizing skill necessary to get things started, if freed from the fear of bondage which attaches to all foreign engagements. They do hire some as it is. But so long as the hiring of a Frenchman leads to the demand that a Briton be also employed, and the retention of an American is countered by the forced engagement of a Japanese, all such invitations to foreign talent are bound to be issued with care, and the contract of hire will limit the powers delegated to the most loyal and useful foreign employee in such a way that the terms shall not form a cover for any chauvinistic adviser who might seek to deliver his department to his home government.

The Great Need of Railroads.

To-day, if freed from the fear of foreign bondage, China stands ready to borrow a billion dollars for railroad construction. Anyone who has noted the low operating ratio upon Chinese railways knows that this would be one of the surest investments in the world, if supervised with ordinary technical ability. The trade activities engendered by the liberation of this sum of money among the laboring population of China would be tremendous. But look at the map! Asia, the largest of the continents, containing half the population of the world, is spanned by a single trunk line. One peninsula at the south is fairly well gridironed. Paralleling the principal eastern gulf there are a few lines. But the remainder of the continent has never heard the sound of a locomotive whistle. An area equal to the whole United States, to twice western Europe, has not one foot of rail. These areas are capable of producing food. A properly designed railroad system would put that vast potential food supply upon the market at a price far lower than those current to-day. Wheat in Szechuan sells for 26 coppers a bushel. It is claimed by the Sieme-Cary Railway and Canal Co. that a railway with one per cent. grades can haul that bushel of wheat to Shanghai for 12 cents. Allow him 24 cents. Fifty cent wheat at Shanghai will turn the flour market of the world facing in the direction of China. The same feat can be done with Manchurian and Mongolian wheat, beef, wool, beans and other products at Port Arthur and Tientsin. Once the transportation system reaches those interior areas and the colonization movement begins, there will proceed an epoch in homebuilding and fortune building like that in the American northwest during the past generation—an epoch connected with the names of J. J. Hill and Lord Strathcona as an indissoluble part of the history of the United States and Canada. "Westward the course of empire takes its way" will be as true in China as it was in America. Ours the choice as to whether it shall be soon or late.

Impediments to Development.

Not until these agricultural areas are in production shall we sound the full depths of Chinese demand for manufactures. So long as the Chinese population is huddled into the few provinces along the coast, all eating from the relatively few acres to be found around their ancestral villages, not only will food be scarce and dear, but there will be a great surplus labor force which, to contribute something to the family income, will follow the small household handicrafts. Such a population depending in first instance upon the soil, learns first to limit its needs to its productive powers, and soon limits its wants to its needs. Thus it has become economically self-sufficient—a customer to nobody. But when a specialized area is opened up whose ambition is focused upon high production per man instead of per acre

it work for a bare subsistence, sending all their surplus products to their proprietors. The Tibetan Lamas have always looked askance at India, fearing that the intrusion from there of modern ideas would lessen their power and prestige. This is one of the reasons why Tibet has always been jealously closed to foreigners. The other reason is that the Chinese have always encouraged the Tibetans to debar foreigners and foreign things, so that their own influence might remain predominant. Since the Lhassa expedition, however, a change has come over the country; the Tashi and Dalai Lamas with large retinues have both visited India and had their eyes opened. They have thrown off the Chinese yoke, whatever it may have amounted to, with the result that their country has enjoyed a peace and prosperity that it had never before known. The Lama system is an anachronism that will tend to die out very fast with the spread of modern knowledge. There are three monasteries in Lhassa containing 7,000 monks each, at Shigatze there are 4,000, and thousands more at other places. Once foreign trade is free, as it now is with India, there is a worldly career for intelligent men who hitherto have gravitated towards the monasteries because there was nothing else to do. Let the hordes of drones be reduced, and much can be done to change Tibet from a profitless wilderness into a country productive in a limited degree. Rich it can never be, unless minerals and the precious metals are discovered in unexpected quantity.

Why the Chinese have ever interested themselves so fiercely in the disposal of a country of so little economic value or strategic importance is a mystery. Weak states compelled by circumstances to give way over important questions probably tend to make a fuss over small matters as being within the line of least resistance. Hence, China, beaten in the war with Japan, deservedly humiliated and mulcted after the Boxer Rebellion, brow-beaten by Russia and Germany in the matter of Kwantung and Kiaochow, made an effort to maintain her prestige when she invaded Tibet and occupied Lhassa in 1910. Next year came the Revolution when the Chinese soldiers in Tibet mutinied against their officers, and were eventually overcome by the Tibetans. Since then China has tried to restore her position by action in the Szechuan Marches. The Tibetans successfully resisted their efforts in 1912, and in 1913 a draft tripartite treaty was drawn up at Simla in which the autonomy of Tibet was recognized, and China undertook not to send troops or officials into the country other than political agents with small personal escorts. Tibet on the other hand acknowledged the suzerainty of China. This treaty was never ratified because China would not agree with the Tibetans on the question of the frontier to be delimited. Since then there was peace on the frontier until 1917, when a Chinese General on his own responsibility, and without the knowledge of Peking, declared his intention in an official despatch to the Tibetan General, of marching on Lhassa. He attacked forthwith and was badly defeated, and most of his army captured. The following year a British agent mediated between the belligerents and in fact persuaded the Tibetans to refrain from penetrating into Szechuan and pushing on to Tachienlu, which the Chinese were, and are still, incapable of preventing. In these circumstances the Chinese have wisely approached the British Government with definite proposals for the ratification of the treaty previously drafted, subject to certain modifications in the frontier as then proposed. The Tibetans are ready enough to make peace with China, and to put an end to the state of war which has caused infinite suffering on the frontier, always provided there is a guarantee of non-interference by China in the future. China, on her part, is approaching the subject in a friendly spirit and there is every probability of an arrangement, satisfactory to all concerned, being concluded at an early date.

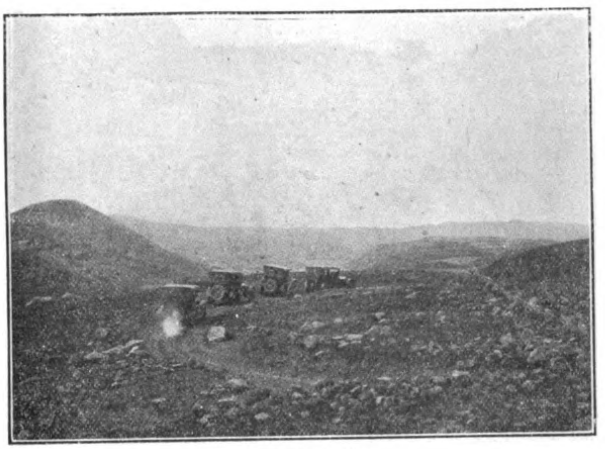
Projected Railway Through Kweichow

Apparently some provincial authorities in China are of the opinion that they are entitled to grant rights for the construction of railways which unquestionably should be built under the direct control of the Central Government. The Provincial Assembly of Kweichow Province, for instance, believes it has the power to grant the right for the construction of a railway from Chungking, in Szechuan Province, through Kweiyang, the Capital of Kweichow Province, to Liuchowfu, in Kwangsi Province. On June 9, according to the Kweiyang correspondent of the "North-China Daily News," the Provincial Assembly held an extraordinary session to sanction an agreement entered into by Mr. Wang Peh-ching—Kweiyang Taoyin and Kweichow delegate at the Shanghai Peace Conference—with the representative of a Chinese Company in Canada for the construction of the above-mentioned railroad. After three days' discussion the Assembly sanctioned the agreement, which calls for the commencement of construction within a year of the signing of the agreement, and completion of the line in eight years; and the deposit with the Kweichow Bank of $1,000,000, silver, on signature of the agreement, as evidence of good faith. The agreement also provides for the granting to the concessionaires of all mining and forestry rights within thirty li (about ten miles) of each side of the railroad, and stipulates that after forty years the line shall revert unconditionally to Kweichow Province. The correspondent understands that the work will cost $40,000,000 silver!

While it is encouraging to see Chinese Companies (taking it for granted that the concern involved in this transaction is bona fide Chinese) investing money in the construction of railways in China, it is regrettable that it is accompanied by the introduction once again of provincial control. So many evils arose in the few years preceding the revolution of 1911 as a result of the activities of Chinese provincial railway promoters, that it is impossible to look with anything but alarm upon the revival of possibilities in the same direction. China's future so greatly depends upon a systematised expansion of railway communication that railway policy should be rigorously controlled by a central organization. The Ministry of Communications at Peking managed to establish itself in that position after 1911, but the recent internal dissension and the declaration of independence by various southwestern and other provinces has lost the Peking Ministry its hold. The provinces through which this projected road will run are now all independent of Peking, but how Kweichow Provincial Assembly can speak on behalf of Szechuan and Kwangsi, remains to be seen. The independent provinces represented by the alleged government at Canton, claim, of course, that they are entitled to mange their own affairs as they think best, and as they are just as hard up for money as the Northern government they probably have decided to take a leaf out of the latter's book and raise money on concessions. They are more honest than the North, however, in this case, since it is to a Chinese concern that they are granting the concession.

So far as the railway projected is concerned it can be said without hesitation that it will not be completed as an efficient proposition in eight years, if at all—at least by the present concessionaires. The route traversed is virtually a sea of mountains, and presents so many engineering difficulties that it is almost impracticable for railway operation, certainly not commercially possible between Kweiyang and Chungking under present conditions of undevelopment in China. When the Company which has undertaken to build this line estimates that it will complete it for $40,000.000 it displays complete ignorance of the country and costs of construction. From Chungking to Liuchowfu is approximately 450 miles, the major portion of it heavy construction, and at least half of it through mountain region of the most difficult nature, if not in some places almost impassable. To build and equip a railroad through such a region will require at least $150,000 per mile, and in parts the cost is certain to run to $200,000 per mile. Over average country a railway would cost from $80,000 to $100,000 per mile, and apparently those concerned regard the area in which they are interested as average. Someone will be disillusioned before the project gets very far—someone who has overlooked the fact that when Messrs. Pauling & Co., Ltd., of London, who held the right to build a line from Canton to Chungking, via Kweiyang, looked into the proposition they, and the Chinese Government, unhesitatingly decided to abandon it as absolutely impracticable under present conditions

Kalgan will not be the starting place for long. There are many disadvantages to Kalgan, the chief being that the first twenty miles out are up a steep valley with a rockstrewn bed. Efforts have been made to improve the going, but the rush of waters from the tree-denuded hills after each heavy rainfall



NEAR PAU-KIANG

washes away all the work that has been done, and the attempt has now been given up in despair. The railway runs west down to Tatungfu and then north to Fengchen, and from there due north to Ping-ti-chuan whence the cars will start their run to Urga. This will avoid the worst piece of road, and shorten the journey considerably. It is hoped that the new construction of fifty miles extension of the Peking-Suiyuan Line will open traffic for the public by the end of 1919.

Japan's Railway and Labor Situation

There are 6,000 miles of national railways in Japan at present, according to Mr. Takojiro Tokonami, home minister and president of Imperial Government Railways, who delivered an address recently at the Tokyo Chamber of Commerce before delegates from chambers of commerce throughout Japan. These railways are capitalized at Yen 1,300,000,000. The revenues for the fiscal year of 1918 amounted to Yen 250,000,000 and expenditures to Yen 160,000,000, which means that there was a profit balance of Yen 90,000,000. The number of passengers carried in that year reached 6,500,000,000, the freights amounting to 5,600,000,000 tons. Compared with 1912, there was an increase of 80 per cent. in passengers and 11 per cent. in freights. Because of the war, freights have increased considerably and continue to increase so that the Imperial Government Railway Board is doing its utmost to improve the lines, to build additional lines and to improve and add locomotives, passenger and freight cars.

The average annual expenditures for construction and improvement has hitherto been between Yen 60,000,000 and 70,000,000. In the present fiscal year—from April, 1919, to March, 1920, the amount is estimated at Yen 120,000,000. New lines to be constructed are estimated at 2,400 miles. Work will be commenced with the view principally to improve the means of communications and transportation between cities and towns. Stations such as at Nagoya, and other important places will be improved. The quadruple track line between Kyoto and Kobe, the double track line between Sanyo and Kwansai, the reconstruction of lines between Kozu and Numazu and between Otsu and Kyoto, land and water connections at Moji and Shimonoseki, at Osaka, at Aomori and Hakodate, etc., are being hastened to completion. As the traffic grows, the freight cars will be enlarged in future from 10 to 15 tons capacity. For country districts, first class passenger cars will be omitted as much as possible, with the view of improving third class accommodations.

During April and May, this year, the average daily tonnage of freight carried amounted to 173,800 tons. On May 27 the previous records were broken with a haul of 189,400 tons. Rice has been given precedence since last year to adjust the supply in different localities. During the month of May, 190,000 tons of rice were carried throughout the country, which was an increase of about 20 per cent. over the corresponding month of last year. Of this tonnage, 41,200 tons arrived in Tokyo in that month. For the months of June and July the freight rate for rice has been reduced by 30 per cent.

Mr. Tokonami, changing his subject, referred to the social problem of Japan. He realizes the supreme difficulty of a solution of the problem. In Europe, he reminded his audience, laborers have always been placed in a position of inferiority; it was necessary to resort to organized efforts to raise the position of laborers, and strikes were indispensable means of attaining the end. In Japan, too, as the industrial system becomes gradually enlarged, the antipathy between capital and labor will grow, and if the situation is left as it is there is possibility that a similar situation as in Europe will develop in Japan, that of capital and labor struggling against each other. In Mr. Tokonami's view, capital and labor should from their very nature morally and economically depend upon each other.

The Lung Yen Iron Mines

In the Far Eastern Review for August, 1918, reference was made to the Lung Kuan Iron Mines, now known as the Lung Yen Mines, and then stated that the differences which had existed between various members of the group of owners had been adjusted. General S. Y. Tinge, managing director of the Peking-Suiyuan Railway, has courteously placed the following information at our disposal:—

The proprietors of the Lung Kuan Iron Mines have the mining rights over the area between Hsuan-Hua-Hsien and Lung-Men-Hsien. Iron ore deposits were also discovered at Yen-Tung-Shan in the vicinity of Hsuan-Hua City, and subsequently the two mines were amalgamated into what is now gazetteed as the Lung-yen Mining Administration. The capital of this chartered Company is fixed at $5,000,000, of which one-half is subscribed by the Government and one-half by a financial group and the public. This group consists of Liang Shih-yi, Lu Tsung-yu, Marshal Tuan Ch'i-jui, Tsao Ju-lin, Mr. E. Y. Sheng, the son of Sheng Kung-pao, Hsü Chie-tse, only son of President Hsü, and General Tinge himself. This group represents three-fifths of the capital: the rest is subscribed by the public. A survey of the area was made by Professor Andersen, Adviser to the Mining Department, in 1913, when it was estimated that there were about thirty-five or forty million tons of ore available. Since then about 40,000 tons have been sent to be smelted at the Hanyang Iron Works, in order that all the peculiarities of the ore may be studied before the machinery is purchased for smelting. The results have hitherto been excellent, and over 50 per cent. of iron has been reported. The production of ore already exceeds 600 tons a day. The following is the analysis of pig iron turned out at No. 4 Furnace of the Hanyang Iron Works:—

No. 1 Foundry Iron.

Si	Mn	S	P
2.00-2.5%	0.75-1.00%	0.02-0.04%	0.3-0.4%

Special Pig Iron

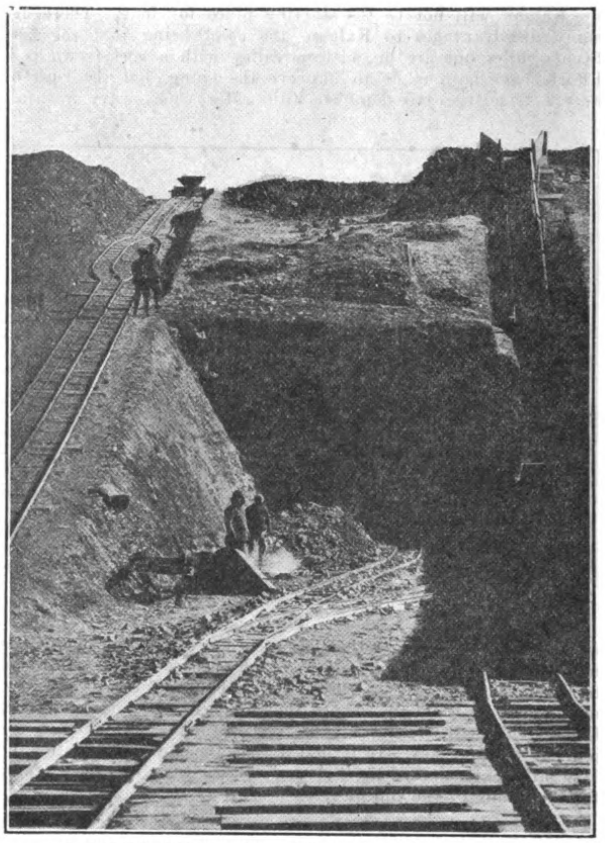
Si	Mn	S	P
3-6%	0.75-1.00%	0.02-0.04%	0.3-0.4%

It is hoped to have blast furnaces working next year. The Board of Directors presided over by Mr. Lu Tsung-yu, the Director General, and General Tinge, the Co-Director General, is composed of Messrs. Hsü Chie-tse, Liang Shih-yi, Tsao Ju-lin, E. Y. Sheng and Tseng Yun-pei, while the Government has as ex-officio repre-

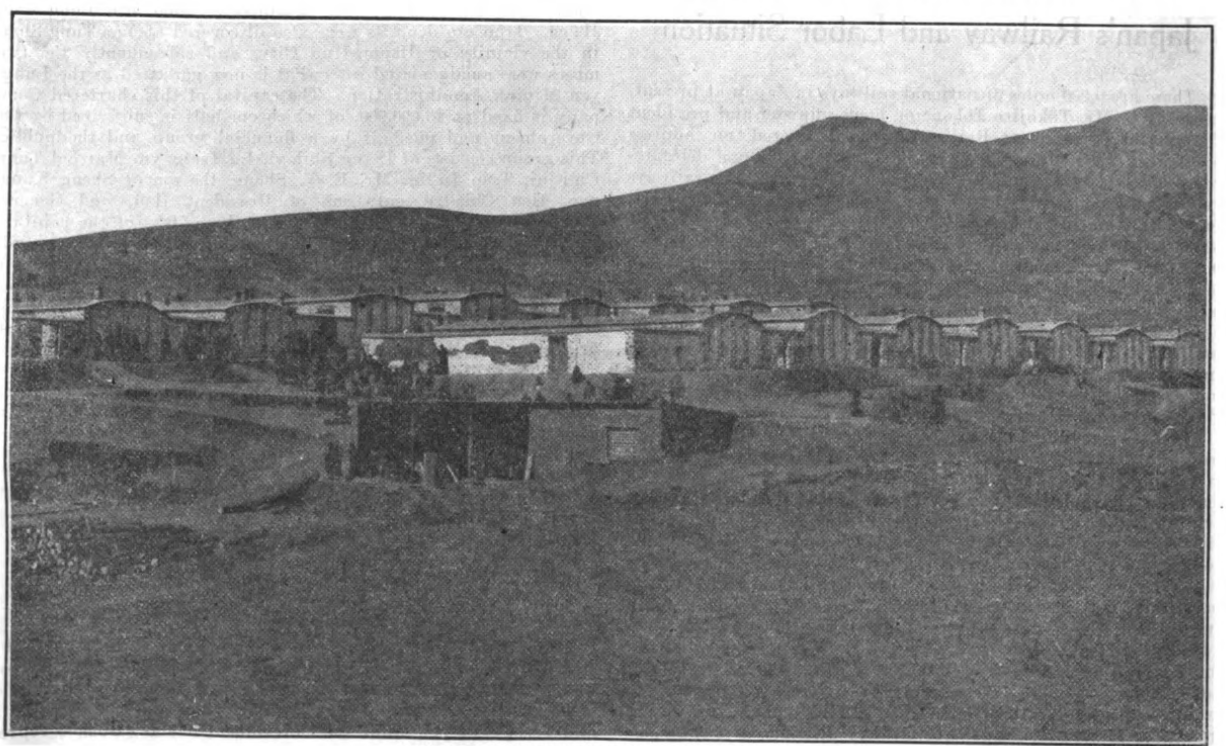
sentatives the chiefs of the Mining and Geological Departments in the Board of Agriculture and Commerce.

Messrs. Perin and Marshall of New York are the consulting engineers, and have already sent an expert to view the property; but at present the bulk of the engineering research is being done by the entire Chinese staff of Lung Yen Mining Administration and assisted by the Hanyang Iron Works, with which Mr. Sheng is in intimate relations.

A Japanese writer in the "Nichi Nichi" realizes that Japan has come too late as a nation to join in the old game of territorial grab. It is an admission which might be pondered by the predatory party still dominant in Japan. Japan *has* come too late. The world, or the vacant spaces in the world, were being colonized by enterprising nations when Japan was jealously maintained as a closed preserve, and by the time she awakened to possibilities the vacant spaces had all been colored on the maps in accordance with the tints adopted by the nations responsible for the colonization. One paragraph from the article is sufficient: "Regrettable to state, Japan was opened to foreign intercourse 50 years too late. If her foreign intercourse had been begun 100 years ago, she could have extended her territory pretty widely. But Japan was opened only 50 years ago. During the interval pacifism has gained ground in Europe and America, but in this space of 50 years Japan has put her armaments in order. When Japan completed her task of building up armaments the world's pacifism was beginning to bear fruit. If 300 years ago the construction of three-masted ships had not been prohibited and if foreign intercourse had been free, the South Sea islands, the Philippines, Borneo, Sumatra, Siam, Annam, and Singapore might have been added to Japan's territory. The ancestors of Europeans and Americans cruised about the world, suffering many privations, and as a reward for their efforts they have acquired the territory they now own. It may, therefore, be said that the narrowness of Japan's territory is due to the fact that our ancestors indulged in idle slumbers." So Japan has none but herself to blame—for slumbering. "The early bird catches the worm"!

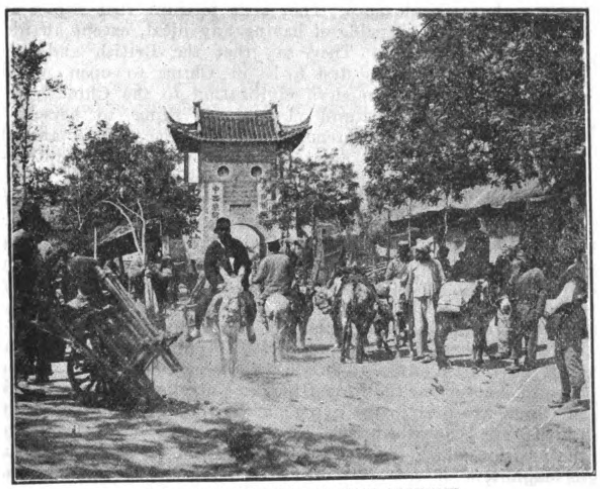


TRANSPORTING YEN-TUNG-SHAN ORE TO LOAD ON P. S. RAILWAY



LABOR QUARTER AND SHOP AT YEN-TUNG-SHAN MINES

turn for ready cash. China's non-signature was the beginning of a new era in her foreign relations, but it is no less the beginning of a new era in her domestic history. It is the beginning of a great campaign. Up to the 28th June there had been no real fighting; nothing more than skirmishing; the militarists had had everything their own way. On the 28th June the first fight in the campaign was won, and won by democracy.



GATE AT HSUCHOWFU, KIANGSU PROVINCE

The Canton-Kowloon Railway in 1918

British Section Reports a Surplus on Operations

The report of the Manager of the Kowloon-Canton Railway (the British section), for the year 1918, discloses the fact that the line continues to pay its way. The gross receipts for the year were $433,274.43 as against $428,246.46 for 1917, an increase of $5,027.97. The balance after paying working expenses stands at $77,053.36.

During the year there was carried out the usual amount of operating improvements. The goods examination shed at Kowloon Station was completed, and the building of a reinforced concrete wharf in front of the shed has been decided upon. Some 2,500 sleepers were renewed, and a contract arranged for the supply of 6,000 Australian hardwood sleepers for further renewals; delivery under this contract having commenced. A few experimental reinforced concrete sleepers have been made, and though some give fair promise of success the present price of materials prohibits more extensive trials at present. The old wooden mile and grade posts throughout the line were removed and replaced by new posts of reinforced concrete.

Exhaustive contour surveys were carried out over the routes for the projected branch lines to Tai Kok Tsui and Tai Wan Bay. Plans and sections covering the work have been prepared and estimates have been completed. A vacant portion of railway reclaimed land at Hung Hom has been levelled and turfed to form a recreation ground for the Chinese staff, the Government having permitted the accumulations of the fine fund to be used for this purpose. A new system of discipline, whereby fines are to be abolished and marks both negative and positive substituted, has been approved and will be brought into operation during the current year.

The working expenses for the year are somewhat higher than in 1917. Locomotive expenses are mainly responsible for this, the percentage of gross receipts being 47.25 as against 43.89 for the previous year. The additional expenditure is due to an advance in the price of coal and to a smaller extent to a slight increase in the consumption owing to heavier trains.

The earnings of the line depend largely upon passenger traffic. The through and joint sectional passengers carried were as follows:—

	1918	1917
Passengers booked by stations in British territory to stations in China	307,494	309,394
Passengers booked by stations in China to stations in British territory	323,643	352,008
Local passengers: main line	296,379	277,968
Local passengers: Fanling Branch	45,187	55,211

During the year there were 2 accidents due to shunting collisions; 5 due to coupling failures; 4 due to engine derailments; 2 to coach derailments; and 2 to wagon derailments. There were 2 deaths among employees, none among passengers, and 2 among others; and one serious injury is listed among "others."

The construction expenditure up to December 31st, 1916, and special expenditure for the year 1917 amounted to $14,812,377.77 Adding to this the special expenditure for the year 1918, $47,469.73, the total cost of the line to December 31st, 1918, was $14,859,847.50. The British section comprises the 22½ miles of main line in British territory, connecting with the 89½ miles of main line in China. The inventory of rolling stock remains unchanged with 13 locomotives, 28 wide-gauge coaches, 6 narrow-gauge coaches, and 52 goods wagons.

Main-line train mileage aggregated 230,746 miles, of which 118,367 is accounted for by passenger trains, 9,112 by goods trains, 34,620 miles by shunting at 6 miles per hour, and 58,534 by standing in steam at 6 miles per hour. The mileage on the Fanling line aggregated 24,973.

The following statement gives the revenue account for the year ending December 31st, 1918:—

Revenue Account for the Year ending 31st December, 1918.

Amount 1917.	Earnings.	Amount 1918.	Total.
$ c.		$ c.	$ c.
	Local.		
119,397.09	By Coaching Traffic	132,353.37	
9,985.88	,, Goods ,, ...	10,761.46	
18,321.86	,, Sundry ,, ...	16,203.82	
147,704.83			159,318.65
	Foreign		
234,622.27	By Coaching Traffic	234,974.80	
33,770.69	,, Goods ,, ...	27,967.80	
2,489.25	,, Sundry ,, ...	2,752.18	
270,882.21			265,694.78
	Branch Line.		
8,809.72	By Coaching Traffic	7,482.43	
849.70	,, Goods ,, ...	778.57	
—	,, Sundry ,, ...	—	
9,659.42			8,261.00
428,246.46			$433,274.43

Amount 1917.	Per cent. on Gross Receipts.	Expenditure.	Amount 1918.	Per cent. on Gross Receipts.
$ c.	%	*Main Line.*	$ c.	%
44,553.81	10.40	To Maintenance of Way and Works...	44,921.86	10.37
187,971.16	43.89	,, Loco. Carriage and Wagon Expenses	204,704.75	47.25
54,144.44	12.64	,, Traffic Expenses	53,675.01	12.39
39,858.76	9.31	,, General Charges	40,716.60	9.40
64.20	.01	,, Miscellaneous Expenditure	64.50	.01
		Branch Line.		
2,809.98	.66	To Maintenance of Way and Works...	3,669.52	.85
6,414.12	1.50	,, Loco, Carriage and Wagon Expenses	7,087.32	1.63
1,615.01	.38	,, Traffic Expenses	1,381.51	.32
337,431.48	78.79		356,221.07	82.22
90,814.98	21.21	,, Balance (Net Earnings)	77,053.36	17.78
428,246.46	100.00		433,274.43	100.00

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

South Manchuria Railway Dividend.—The 18th general meeting of shareholders of the South Manchuria Railway Company was held in June, when the following account for the latter half term of last year was declared and approved :—

	Yen
Net profit	22,193,171
Brought over from previous term ...	7,905,707
Total	30,098,899
Legal reserve	1,109,658
Dividend on shares held by the Government	3,500,000
Dividend (6 per cent. per annum) ...	3,120,000
Special dividend (4 per cent.)	2,080,000
Special reserve	5,000,000
Reserve for redemption of debentures...	7,000,000
Bonuses	300,000
Allowances to retiring officials	170,000
Carried forward to next term	7,819,241

Railway Receipts in Japan.—Receipts of the Government Railways during May last totalled Yen 4,261,222 from passengers (6,601,616 in number) and Yen 3,538,905 from freights (1,624,988 tons in weight) making a total of Yen 7,800,127. Compared with the corresponding month of last year the income from passengers shows an increase of Yen 1,024,223 and that from freights Yen 748,323.

Receipts of S. M. R.—The receipts of the South Manchuria Railway Company during June last amounted to Yen 4,614,769, representing an increase of Yen 1,140,361 or 24.7 per cent. as against the corresponding month of last year. The income from passengers (617,817 in number) amounted to Yen 857,570, that from freights Yen 3,423,188, and that from warehouses Yen 79,711.

Through Traffic Arrangements in China.—The Railway Through Traffic Administration has published a booklet giving general information concerning the Chinese Government Railways and through traffic arrangements. It is hoped that the booklet will be instrumental in promoting and encouraging traffic between China and Japan, and for this purpose it gives a great deal of information in both English and Chinese.

Shanghai Tramway Shows Growth.—At the meeting of the Shanghai Tramways in London, in June, it was shown that passengers carried in 1918 numbered 76,683,690, an increase of 5,222,108 over the figures for preceding year. The gross traffic receipts were given as $1,720,822, an increase of $107,190 over 1917. The report announced that fifteen trailers and seven railless cars were to be put in service as soon as practicable, bringing the rolling stock up to 90 motor cars, 85 trailers, and 14 railless cars. The accounts show a profit of £71,537 7s. 3d., which compares with £67,504 5s. 6d. for 1917. Including £14,264 2s. 11d. brought forward from the preceding year, the total credit before making appropriations was £85,801 10s. 2d. An interim dividend of 5 per cent. (less income tax) accounted for £16,000 and a final dividend of 5 per cent. (less income tax), making 10 per cent. for the year, plus a bonus of 5 per cent. (less income tax), accounted for a further £32,000. The amount carried forward, after putting £10,000 to reserve for renewals and applying £8,000 to the extinguishing of preliminary expense accounts, was £19,801 10s. 2d., which is subject to excess profits duty.

Shanghai Tramways.— The following tables give the earnings for June and for the six months ended June 30, 1919 :—

	Gross Receipts	Loss by currency depreciation	Effective Receipts
June, 1919 ...	$158,829.77	$39,667.99	$119,161.78
6 months ...	966,341.11	237,024.07	729,317.04

Effective receipts for June compare with $104,276.08 for June, 1918, while the effective receipts for the six months period compare with $634,348.61 during the same period in 1917. Recent weekly figures were as follows :—

Week ending :	Gross Receipts	Loss by currency depreciation	Effective Receipts
July 2 ...	$36,357.95	$9,059.84	$27,298.11
July 9 ...	37,067.34	9,303.54	27,763.80
July 16 ...	39,959.81	10,080.95	29,878.86
July 23 ...	39,810.91	10,044.60	29,044.60

SHIPPING

Dollar Line to East Coast.—The Dollar Line will transfer its fleet in the Oriental service to New York, as high trans-continental freight rates now make it profitable to use the Atlantic seaboard for shipments destined to the Far East originating as far west as Omaha.

Pacific Mail to Add to Fleet.—The Pacific Mail Steamship Company have drawn up plans for four big trans-Pacific steamers with a capacity of 300 first class and 150 second-class passengers and 12,000 tons of cargo. The Company plans a weekly service to the Orient with these vessels and four others which it hopes to purchase from the Government. The present fleet may be continued as intermediate steamers or be placed on the run to Indian ports.

Japanese Steamers Chartered to America.—Twenty-one of the twenty-three steamers chartered by Japan to the American Government have now been returned to Japan. The other two were lost at sea. The charters ranged from 81 days to 383 days, the charter rate being 40s. 6d., or about Y.20 per ton. The total tonnage of the steamers was 151,293, and the total charter money paid by America was Y.28,745,670. In addition to this the owners were paid Y.8,500,000 by the Japanese Government, to make up the difference between the amount asked by the owners and that offered by the American Government. The owners refused to charter at the American rate on the ground that higher rates were obtainable in Japan. The Japanese Government had to step in and pay the difference so that the Japanese mercantile marine could be credited with having helped to win the war.

Admiral Line to Open in Shanghai.—The Admiral Line, an American concern, will shortly open offices in Shanghai. Offices have already been opened at Manila, Hongkong, Singapore, Kobe and Vladivostock. The Admiral Line is a consolidation of several shipping companies operating on the Pacific Coast of the United States, and owns 37 ships which are now being operated on the Pacific Coast. Thirty-five steamers have been assigned to the line by the U. S. Shipping Board and are running on various routes out of Seattle and Portland. The Board has allotted the Company seven 10,000-ton steamers for operation between Seattle and Portland and the Far East. A monthly service to Puget Sound and a six-week service to Portland will be maintained. Passenger ships will be operated at a later date.

International Steamship Company.—The establishment of the Kokusai Kisen Kabushiki Kaisha (the International Steamship Company) has at last been decided upon and the first general meeting has been held. The company is capitalized at 100 million yen divided into 2 million shares, which have all been taken up by the promoters. A quarter of the capital was paid in simultaneously with the establishment and the second (Yen 18,750,000) and third (Yen 43,700,000) installment capital are to be paid on August 1, and February 1 next year. The company will issue debentures for Yen 62,500,000 and in addition raise a loan amounting to 25 million yen.

O. S. K. Steamers to Call at Celebes.—The Osaka Shosen Kaisha has decided to add Menado, in Celebes, to the ports of call for steamers on the Australian line. The new call will come into effect with the *Nanking Maru*, which is sailing towards the end of next August.

N. Y. K. Proposes Building Big Ships.—The Nippon Yusen Kaisha is considering the construction of 30,000-ton passenger liners for either the American or European run, as the shipping situation may make advisable at a later date.

T. K. K. Will Build Liners.—The Toyo Kisen Kaisha has decided to build two great liners of 30,000 tons each to be used between Hongkong and San Francisco. They will have a high speed and are to be used almost exclusively for passengers.

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VOL. XV. No. 9

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

遠東時報

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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XV SHANGHAI, SEPTEMBER, 1919 No. 9

A Year's Working of China's Railways

Statistical Report for 1917

The Ministry of Communications has circulated its report upon the Chinese Government Railways covering the year 1917. Although this has come from the press several weeks later than the report from the Department of Posts for the year 1918, there are other conditions which make the appearance at this time of this report upon railways a matter of some satisfaction. The report for 1915, the first to be issued covering a full year, did not appear until August of last year, or two years and seven months after the close of the period to which it referred. The report for 1916 appeared during April of this year, or two years and three months after the close of the period to which it referred. Now, less than four months later, this report for 1917 appears. Although a year and seven months late, it marks the public reception of three annual reports within a period of twelve months—which indicates that the bureau charged with this work is headed in the right direction. It will be interesting to see if the process of catching up with the calendar will be fast enough to bring out the report for 1918 before the end of the current year. To our view, the aim should be to bring out these reports not later than nine or ten months after the year to which they refer is closed. There are difficulties in the way of equalling the record in some foreign countries, but if the Department of Posts can report at the end of six months, the Department of Railways ought to be able to report at the end of nine—in spite of the fact that its reports are much more elaborate and complicated.

The general results for the year 1917 were given on page 386, the May number of the FAR EASTERN REVIEW. For the sake of completeness and continuity some of these general results will be repeated herein. The financial results of operations for the year compared with those of the previous year are stated as follows:—

	1917.	1916.	Increase.
Operating Revenues ...	...$63,873,703.67	$62,761,720.23	$1,111,983.44
Operating Expenses ...	... 30,040,564.50	28,842,277.93	1,198,286.57
Net Operating Revenues ..	33,833,139.17	33,919,442.30	Dec. 86,303.13
Income Debits ...	... 13,303,440.24	13,967,945.92	Dec. 664,505.68
Income Credits ...	... 1,100,496.79	775,258.89	Inc. 325,237.90
Net Income Debits	... 12,202,943.45	13,192,687.03	Dec. 989,743.58
Surplus for the Year	... 21,630,195.72	20,726,755.27	Inc. 903,440.45

It will be remembered that floods interrupted through traffic on the Peking-Hankow Line for about three months of the summer and fall of 1917, and that the north end of the Tientsin-Pukow was cut off from the rest of the line for a similar period. In addition to this, there was considerable political unrest, the Chang Hsun rebellion, and the beginning of the disaffection of the South. The latter resulted in the confiscation of the Canton-Samshui Line with its annual surplus of nearly $400,000 by the Southern authorities. This line therefore made no report, and except for its kilometrage and balance sheet data for the year 1916, its statistics are omitted from the report. The Canton-Kowloon was not confiscated, but whether forbearance in that case was caused by the foreign interest in the Canton-Kowloon or by the fact that it operates at a deficit is not disclosed. Under these conditions the gain in surplus for the year of approximately $1,300,000 indicates a healthy fundamental position for railways in China.

Further analysis of the report indicates a condition even better than would be suspected from the bald report. Operating revenues contain three items which are more nominal than real These are revenue from Government (principally military) transportation, from carriage of service stores such as coal, sleepers, and repair material, and from the transportation of materials for other Railways. The first of these results in a mere book-keeping transfer between the railways concerned and the Ministry of Communications. The second results in a mere book-keeping transaction within the railway itself—a credit to revenues and a debit to expenses. The third results in a credit to the revenues of one government line and a debit to the expenses of another. If these combined items be eliminated, the actual commercial revenues of 1917 are $59,432,915.77 compared with $56,663,815.83 in 1916, or an increase of $2,669,099.94. Then if allowance be made for the Canton-Samshui figures, also, there is found to be an actual gain in commercial business on the lines which reported of over $3,156,000. This is a gain of over 5 per cent.—which for a bad year is quite encouraging.

In this connection, the most hopeful feature, perhaps, is the decrease in revenue from Military transportation. In 1916 this figure stood at $4,400,000—in round numbers. In 1917 it was only $2,957,000. Perhaps things are improving after all. There is no chance for the bilious individual to suggest that these figures merely mean that less money was collected, not that the railway was interfered with less. These figures have nothing to do with collections. They are merely the figures which the railway itself assessed against the Government. If there is any dispute in the figures, the differences will appear in following years under Profit and Loss. To be sure, these totals contain nothing for the use of goods wagons used as living quarters.

One further service which the railways render the Government is not reflected in the report. This is the carriage of mails. No figure is given in the report for this item, but it is stated to be merely nominal. Observation makes it evident that this service is considerable. Every fast passenger train has one or more carriages for the exclusive use of Posts, while reserved compartments and space for pouches and baskets make every slower train yield its contribution. Indeed the parcels post practically means that the railways are compelled to haul free matter which otherwise would be carried at a good price in the railway's own parcels service. While the Department of Posts was struggling for existence, it may have been good policy to subsidize it by means of this forced service from the railways. But for several years the posts have been operating at a goodly profit. How much of this profit is due to this free service, we are unable to state. But it would seem that means should be taken by the Ministry of Communications to find this out and make its findings public through these reports. At any rate it would be only sound accounting to adjust this matter between these two co-ordinate departments of its own jurisdiction. It may be wise to continue to make the railways pay a subsidy to the posts, but at least these two departments should have some idea of how much this subsidy amounts to

Operating expenses increased, in round numbers, $1,200,000. Over thirteen pages are given in the report to the analysis of

this fluctuation, treating the subject both by lines and by departments. From the standpoint of many government reports, this treatment is rather full, but in a country where even the best informed are mere tyros upon the subject of railway management full discussion is to be welcomed. Probably no subject of applied economics is of more importance in China than that of railway transportation. The economics departments of colleges in China are rapidly extending in answer to a demand on the part of students for instruction along these lines. The analysis of operating expenses contained in this report is hereby commended to teachers of such courses as valuable material.

In explanation of the increase in operating expenses little in the way of new tendencies is revealed. Every department except that of maintenance of way participated in the increase. However, general administration accounted for $542,000 out of the $1,200,000 increases—$370,000 being found in increased bonuses to employees. The decrease in maintenance of way expense is something over $200,000 and is more than explained by the decrease in sleepers (or ties) replaced in track in which there was a decrease of $362,000, or about 19 per cent. As the price of sleepers was considerably higher in 1917 than in 1916, the actual number of renewals was less than that in 1916 by a percentage considerably larger—which means that this item will bear careful watching during following years.

Maintenance of equipment expenses amounting to $6.308,790.08, contain $1,837,818.66 depreciation charges.

A pretty clear case for the re-organization of the Administrative departments of several of the smaller lines, and perhaps one or two of the larger ones, is made in a summary which compares the cost of this department per train kilometre with the total operating expense per train kilometre. The summary is introduced by a paragraph containing the following:

"Theoretically, Administration, which is the largest division of general expense, is intended to secure the best use of the property possible and to prevent needless expense. Hence it is possible that with a parsimonious policy of providing an inadequate number of officers or salaries insufficient to secure a high order of ability, general expense might be reduced with the result that far greater sums would be wasted in other departments. . . . However, it is quite apparent from this summary that high Administrative expense has in most cases failed to effect final economies."

EXPENSE PER TRAIN KILOMETRE, ADMINISTRATIVE AND TOTAL, BY LINES.

Name of Line.	Expense per Train Kilometre. Administration.	Total
1. Peking-Mukden	$0.09	$1.24
2. Shanghai-Nanking	.11	1.09
3. Peking-Hankow	.13	1.33
4. Taokow-Chinghua	.15	1.02
5. Kaifeng-Honan	.15	1.29
6. Shanghai-Hangchow-Ningpo	.16	1.80
7. Tientsin-Pukow	.17	1.41
8. Chuchow-Pinghsiang	.17	1.49
9. Peking-Suiyuan	.20	2.23
10. Chengting-Taiyuan	.20	1.45
11. Kirin-Changchun	.20	1.91
12. Canton-Kowloon	.31	2.09
13. Changchow-Amoy	.34	2.02
Chinese Government Railways	.14	1.40

The lines with sparse traffic will rejoin, of course, that the train kilometre basis is unfair in the comparison. There seems to be a delusion that a small road needs just as elaborate an organization as a large one. This argument is effectively answered by the high position in the list above of the Taokow-Chinghua—a line which has the fewest train kilometres per kilometre of line of any in the Chinese system (except one), is also one of the shortest lines, and hauls the heaviest train loads of any but two.

Out of every dollar of operating revenues some forty-seven cents were required to pay operating expenses. This relation of operating expenses to operating revenues is usually referred to as "Operating Ratio" and sometimes as "Operating percentage." Obviously it is a very convenient average to use in comparing the success of the different lines, and of the same lines from year to year. This average shows a slight increase over 1916 but is much lower than in 1915 when it stood at 53. Comparisons with foreign countries redound to China's credit. The 1916 figure for Japan was 52, India's is about the same, while European and American railways average between 60 and 70.

Another interesting comparison is afforded in a summary giving the operating expense of performing 1,000 units of service. In this table no units are included except passenger kilometres and ton kilometres. The service rendered in shunting, carriage of parcels, telegraphs, etc., is ignored. Combined, these ignored services account for a little over five per cent. of total revenues. But it is impossible to include them on any practicable basis, and the omission is not serious. Again, it may be urged with propriety that the passenger kilometre and the ton kilometre are not similar units, and therefore that varying proportions of these upon the different lines would impair any comparison which might be attempted. As the results come out however, the fluctuations occur quite contrary to any hypothesis of this sort. Of course it must be recognized that upon lines with severe grades or curves, where fuel expense is high, etc, that there will be higher costs. But the purpose of the comparison seems to be less to explain differences than to show that they exist—and they seem to exist in many cases with but little opportunity for explanation. It appears that operating expense per 1,000 units decreased 40 cents, compared with 1916—from $6.16 to $5.76. The only lines showing important increases in this cost were the Peking-Hankow—$5.94 to $6.32—and the Peking-Suiyuan—$13.43 to $15.47. In the following recapitulation there is given for each line both the operating ratio and the average operating expense per 1,000 units of service.

Name of Line.	Operating Ratio.	Operating Expense per 1.000 units of service.
1. Peking-Hankow	37.4	$6 32
2. Peking-Mukden	38.4	4.75
3. Taokow-Chinghua	41.3	5.04
4. Kaifeng-Honan	46.3	8 64
5. Chengting-Taiyuan	50.8	13.22
6. Tientsin-Pukow	50.9	5 74
7. Shanghai-Nanking	52.8	3 73
8. Peking-Suiyuan	68.5	15.47
9. Kirin-Changchun	69.7	15.17
10. Shanghai-Hangchow-Ningpo	81.2	7 48
11. Chuchow-Pinghsiang	82.3	7.89
12. Canton-Kowloon	104.6	8.89
13. Changchow-Amoy	159.5	16.78
Chinese Government Railways	47.0	5.76

The low operating ratio of the Chengting-Taiyuan standing opposite the high expense per 1,000 units is explained by rates which are among the highest in China. The reverse is the situation on the Shanghai-Nanking which has the distinction of the lowest costs per 1,000 units of any line in China. A similar explanation is in order for other comparisons which might be made.

Net operating revenue, that is, the remainder after the payment of operating expenses—amounted to 8.2 per cent. upon the investment in the property of the combined lines. The Peking-Mukden had the largest return, 17.1 per cent., the Peking-Hankow being next with 11.8 per cent. At the other end of the list, two lines, the Canton-Kowloon and the Changchow-Amoy could not pay operating expenses. Except for these two and the Shanghai-Hangchow-Ningpo, every line could pay every obligation to outsiders. An additional three, however, could not have paid 5 per cent. upon the equity in the property owned by the government if this had been required. These lines were the Kirin-Changchun, the Chuchow-Pinghsiang and the Peking-Suiyuan. The system as a whole, however, was in a strong nominal position. Interest charges decreased by over $2,325,000, due principally to the favorable rates of exchange, which in effect reduced the interest rate to 3.58 per cent. upon the balance sheet statement of funded debt. Net operating revenue, therefore, was sufficient to provide $2.62 for every dollar of interest or other income charge which had to be met. And the surplus for the year was equivalent to 19 per cent. upon the Government's investment in the combined lines.

In all of the foregoing no account has been taken of the fact that revenues contained at par value a large number of notes issued by the Peking branches of the Bank of Communications and the Bank of China, which notes were inconvertible in large quantities, and in small quantities only at a heavy discount. On the other hand expenses were paid largely in silver. In order to secure sufficient silver for this purpose, a considerable quantity of bank notes were sold, for the discount upon them amounted to $2,172,758.53. The report, however, explains that even this loss does not fully represent the gravity of the situation, for the reason that a large number remained in the treasuries of the four principal northern lines, which would probably have to be disposed of at a loss in the future. Over $11,000,000 out of $20,000,000 cash in the treasuries of the combined lines consisted of such inconvertible notes.

The report for 1917 gives for the first time the debits and credits to Profit and Loss. The Profit and Loss account covers entries which arise out of transactions of previous years and hence do not pertain to the operations of the current fiscal year, and other loses and gains which, if included with the regular accounts, would distort the meaning of their balances. An example of the latter is the extraordinary losses caused by the floods of the year 1917. But the majority of the items reported in 1917 are concerned with bills for military transportation which were written off as disallowed, or else former disallowed items which were finally allowed. All told the net result of the Profit and Loss transactions was to reduce the surplus for the year by something over $833,000.

The most important capital transactions for the year were the redemption of mortgage bonds to the extent of $2,630,063.95 upon four lines, the Peking-Hankow, the Peking-Mukden, the Chengting-Taiyuan and the Taokow-Chinghua; and on the other hand the contracting of a new loan upon the Kirin-Changchun which increased the debt upon that line by $3,579,710.37. What the Government did on this line, was in effect to sell its permanent Government investment in it—all except $421,000 odd. When it is realized that there still remains nearly $114,000,000 of permanent Government investment in the Government lines, it can be appreciated what opportunities are still left for an administration with ambitions toward high finance if it were to follow the Kirin-Changchun example.

During 1917 $3,427,404.03 was added to the cost of road and equipment of which $2,473,558.74 was met by appropriations from revenue. Rolling stock and buildings of various sorts were the two leading forms which these additions took, but the usual small jobs covering every conceivable part of the property, in the aggregate amount to more than either of these two leading heads. In this connection it should be remembered that, according to the uniform classification of accounts, prescribed by the Ministry of Communications in 1915, whenever a single job amounts to less than $2,000 it is charged to operating expenses under a head entitled new minor works, and does not appear under these additions to property. The report for 1917 does not state the aggregate under new minor works.

The subject of equipment shortage has been treated so many times in the columns of the FAR EASTERN REVIEW that readers will undoubtedly appreciate an account of what the report for 1917 has to offer on this point. During the year, seventeen road engines and two shunting engines were added to the list. This is an increase of less than 3 per cent. in number, but as the engines were all of heavy type it was equivalent to an addition of 4 per cent. in tractive power. By means of a heavier average train load—an increase from 227 to 244 tons in the case of goods—an actual decrease in train kilometres was accomplished amounting to 2 per cent. While total locomotive kilometrage apparently increased, road locomotive kilometrage decreased and the kilometres run per road locomotive decreased from 45,717 in 1916 to 43,772 in 1917. A considerable portion of this decrease is due to the fact that for three months the Peking-Hankow locomotives were practically tied up by floods. During the remaining months of the year they were apparently busier than in 1916. The Shanghai-Nanking was forced to run its engines 65,324 kilometres against 62,380 in 1916. Compare this with 43,637, the average in America, and 40,583 the average in England, and the strain upon the motive power of this line is immediately apparent. Yet the Shanghai-Nanking did not receive any of the new power. The Peking-Hankow received ten of the new road engines and the Peking-Suiyuan received the other seven. The Peking-Suiyuan locomotives ran an average of only 22,540 kilometres. Why that line should receive additions to this class of equipment when the Shanghai-Nanking whose locomotives average three times as much work did not, is one of the yamên mysteries which the report does not reveal.

Under the discussion of performance by passenger carriages there may be found a naive remark. In a tabulation just preceding, the number of passenger kilometres has been divided by the number of carriage seats to find out the work done by each seat. Then this yearly average has been divided by 365 to ascertain the average daily performance. The report then reads

"The best performance per seat is 130 kilometres per day and the average performance is only 97 kilometres per day. If passenger cars run at the rate of only 20 kilometres per hour, this would indicate either that they are in motion not more than six hours per day or else *many seats are not occupied by paying passengers a considerable portion of the time in motion.*"

Anyone who has seen one of these passenger trains knows that the speed equals at least 20 kilometres per hour. We believe the managements of the lines keep the carriages in motion more than six hours per day. We have seen enough of these trains to know that the seats are occupied, and we have no cause to ask: Can it be that the passengers are not "paying"? On the Tientsin-Pukow railway in 1917 none of the minions of the militarists paid, and they more than half filled every passenger train.

But the principal shortage of equipment occurred under goods wagons. It is gratifying to know that 100 new wagons were added to the stock, but the gratification changes to chagrin when it is found that, because of the rebuilding of old wagons, the net gain in capacity is only about 1,000 tons, which leaves the carrying capacity of the entire supply still below that reported in 1915. In the meantime the tonnage handled has increased 25 per cent. Naturally this has required increased performance from the car supply available. This performance has been computed for 1917 in the same manner as for 1916. In brief, this is to take tons of carrying capacity of wagons owned and add or subtract carrying capacity gained or lost by interchange or rentals, then using this figure as a divisor and the number of tons carried as a dividend. compute the average number of tons carried per ton of capacity during the year. This is practically equivalent to the average number of times each car was loaded to capacity during the year. In the same manner the average number of ton kilometres per ton of carrying capacity is computed. If the first named average be multiplied by two, the number of days required for loading and unloading is obtained. This number subtracted from 365 gives the number of days left for running. (In certain cases only one day is allowed for loading and unloading). Then if these "running days" be divided into the number of ton kilometres carried per ton of carrying capacity during the year, an average is given which is called "Ton kilometres per ton of carrying capacity per running day." This average the report avers is "large or small according to the degree in which that car was active or inactive, fully loaded or partially loaded, moving under tonnage or moving empty."

Measured on this basis, the goods wagons of the Government railways made an average of 49.1 in 1917 compared with 46.9 in 1916 The Shanghai-Nanking leads the list with 94.0 and, of the goods carrying lines, the Shanghai-Hangchow-Ningpo foots the list with 10.9. These two lines were connected throughout the year 1917, but apparently there was no attempt to relieve the evident shortage on the older line from the surplus on the Shanghai-Hangchow-Ningpo. These two lines are under the same set of officers. What is the explanation? Another set of comparisons is presented in this connection. The Peking-Hankow and the Peking-Suiyuan are under complete control by the Ministry of Communications. The Peking-Hankow shows an average performance of 62.5 in spite of flood interruptions. The Peking-Suiyuan shows only 15.6. The earning value of wagons on the Peking-Hankow during the year is reported to be approximately 70 cents per ton per day, or $21 for a 30-ton wagon. Why was not the excessive Peking-Suiyuan wagon supply called upon to help out the Peking-Hankow? That is another of those mysteries. There was a time when such failure to act was excusable in view of the fact that there was available no trustworthy information. But now the information is available.

The Through Traffic Arrangements of the Chinese Government Railways

The early history of the different lines which make up the system of the Chinese Government Railways was characterized by independence of action. The construction cost of most of the lines was paid for by means of funds loaned from foreign financial syndicates and the terms of the loan agreements made with these bodies were not by any means uniform. In addition to lines constructed under loan agreements there are three concession lines, the South Manchuria, Kiaochow-Tsinan and Yunnan Railways. These are of a political nature and the concessions for them were granted more or less as the result of diplomatic pressure. The diversity of the conditions under which construction was undertaken may therefore be imagined.

This diversity did not tend to the control under a central authority with the result that in the early days the different lines were practically a law unto themselves. Each line had its own particular policy in regard to rates, etc., which it carried out without much regard to what was done on sister lines and thus intercommunication, was at a discount. It is only of recent years that the idea of a national system of railways under the control of a central authority has come into being and the policy of the Government directed towards its realization.

The purpose of this article is not, however, to discuss either loan agreements or the railway policy of the Chinese Government but to trace the development of the through traffic arrangements which have been built up of recent years. The remarks above have only been made to show that conditions were not favorable in the early days to the development of intercommunication between the different lines. In fact down to April 1, 1914, the only arrangements made in that direction were between the three northern railways, the Peking-Hankow, Peking-Suiyuan and Peking-Mukden lines, for through booking of passengers and certain kinds of goods between certain stations on these lines. Even this limited arrangement was only come to after considerable difficulty due to the different systems of rates in force on each of the lines mentioned.

The year 1913 may be regarded as the time when the Chinese Government Railways began to realize the advantages of intercommunication, not only between themselves but with railways in foreign countries as well. In April of that year a Conference was held in Tokyo at which the representatives of the Peking-Mukden Line met those from the South Manchuria, Chosen and Imperial Japanese Government Railways and laid the foundation of the through passenger traffic over the railways mentioned. After the conclusion of this Conference a meeting was arranged between the representatives of the Peking-Mukden, South Manchuria and Chinese Eastern Railways which resulted in a through passenger traffic being inaugurated over these railways also.

In the summer of the same year the Peking-Mukden Line sent its representatives to the Trans-Siberian International Through Traffic Conference held at Moscow and as a result was admitted to participation in the Trans-Siberian through traffic arrangements.

The Peking-Mukden Line by reason of its geographical position links up the Chinese Government Railways system with the railway systems of other countries and on account of this was selected by the Ministry of Communications to undertake the pioneer work in opening up relations with these systems.

In October, 1913, the Ministry of Communications called a meeting in Tientsin of representatives from the Peking-Hankow, Peking-Suiyuan, Peking-Mukden, Tientsin-Pukow and Shanghai-Nanking Lines to devise arrangements for domestic through traffic. The result of this meeting was the inauguration of through booking arrangements for passengers, baggage and parcels over the lines mentioned.

The arrangements come to in the year 1913 have been improved and extended at the yearly conferences held since and the growth of through traffic work in the interval led the Ministry of Communications to establish, in September, 1918, an organization known as the Railway Through Traffic Administration to take charge of through traffic matters.

This Administration has its offices in the Ministry itself and its duties are administrative only, all executive power being retained by the Ministry.

Prior to the organization of the Railway Through Traffic Administration the administrative work in connection with through traffic was conducted by the Peking-Mukden Line acting under the direction of the Ministry.

The Railway Through Traffic Administration on its inauguration relieved the Peking-Mukden Line of this responsibility and all the archives in connection with the work were transferred from that line to the new organization in September, 1918.

The Administration is organized in four divisions. The General Affairs Division has amongst its duties the control of the staff, translation work, custody of documents agreements and contracts and preparation of advertisements, guide books and other publicity matters.

The Domestic Through Traffic Division deals with all matters relating to the through traffic between the different Chinese lines.

The International Through Traffic Division has control of all matters relating to through traffic between the Chinese Government Railways and railways in foreign countries and steamship companies.

The Railway Clearing House Division has charge of the clearing of through traffic accounts and the division of the receipts in so far as they concern the Chinese Government Railways.

At the present time it also has control of the accounts and division of the receipts from the China-Japan Through Passenger Traffic amongst all the railways concerned in that traffic, a duty which is taken in turn for periods of five years by the Chinese Railways and the Imperial Japanese Government Railways. Its other duties include the preparation of through fares and rates, statistical statements and other accounts work generally.

The chief of the Railway Department of the Ministry of Communications is the Director of the Administration and is responsible to the Ministry for its work.

In view of the growth of through traffic and the continual extension of the arrangements therefor this Administration seems destined to play a very important part in the railway life of China.

It may here be remarked that annual Conferences of the Railways are held to deal with through traffic matters and the arrangements now existing are the result of the deliberations of these Conferences. Their resolutions are submitted to the Ministry of Communications, which, of course, retains the right of veto in regard to them, and they become operative on the issue of its necessary order of approval.

The difficulties which arise at these conferences due to the different methods of operation, tariffs, etc., in force on the different lines are numerous but they have invariably been overcome through the keen desire for uniformity which has been manifested by the delegates. In fact it would not be too much to say that the success of these conferences is having a profound effect in fostering a desire for unification all round which is now beginning to make itself felt in railway circles generally and which is bound to be translated into action with beneficial results in the not distant future.

It seems desirable at this stage to describe at some length the through traffic arrangements as they now exist and to trace their growth from the beginning up to the present time.

China-Japan Through Passenger Traffic

As already remarked this traffic was inaugurated as the result of a conference of representatives from the Peking Mukden, South Manchuria, Chosen and Imperial Japanese Government Railways which was held at Tokyo in April, 1913.

The conference made arrangements for the sale of through single tickets and through registration of baggage between the most important stations on the railways mentioned which were brought into operation from October 1, 1913. The success of these arrangements was so quickly evident that at the next conference they were extended to include the important stations on the Peking-Hankow, Peking-Suiyuan, Tientsin-Pukow and Shanghai-Nanking Lines as well. The Shanghai-Hangchow-Ningpo Line was admitted to participation later

It soon became evident that further facilities were required and the arrangements were extended to permit of return tickets being sold. Reduced fares for parties making return or circular trips wholly or partly over the lines of the railways interested were also agreed to.

In order to facilitate business between China and Japan arrangements have been made for the through booking of parcels. These arrangements include the collect on delivery system as well as the ordinary conveyance of parcels.

The difficulties attendant to Customs examination of baggage and parcels booked through have been got over by the South Manchuria Railway undertaking to pass such through the Customs at Antung. Those desiring to take advantage of this facility are required, when booking baggage or parcels, to make out a declaration containing the necessary information for the Customs authorities, forms for which purpose are obtainable at the stations. The South Manchuria Railway, when such information is furnished, attends to the Customs formalities and advances any duty levied.

Money so advanced is recovered from the owners when the baggage or parcels are delivered at the destination station.

At the third annual conference held in Peking in April, 1915, the advisability of entering into relations with steamship companies operating between China and Japan was discussed and as the result of this agreements were made with certain steamship lines for the sale of circular tour tickets at reduced rates covering combined rail and steamer routes. Such tickets are now sold covering the circle starting from Peking, travelling viâ Mukden and Chosen to Japan; thence to Shanghai by steamer, and completing the journey to Peking, either viâ the Yangtze and Hankow or by way of Pukow and Tientsin.

Tickets are, of course, also obtainable for the circle mentioned available in the reverse direction and are on sale at all the principal stations on the interested railways.

At the same conference it was also decided to enter into arrangements with the steamship lines operating on the Pacific for the sale of overland tour tickets at reduced rates between Japan and China so as to offer travel facilities to visitors to the East, many of whom, after visiting Japan, continued their trip to Shanghai by steamer thus missing the interesting sights to be seen in Chosen and North China. The steamship lines received favorably the proposals made and these overland tour tickets covering the routes from Yokohama to Hankow or Shanghai and *vice versâ*, are now sold by them to holders of their ocean steamer tickets who desire to include Chosen and North China in their itinerary.

Tickets for the route between Yokohama and Shanghai include coupons for the side trip from Tientsin to Peking.

At the seventh annual conference held in Peking in April of this year draft proposals were agreed to for the sale of single tickets between China and Japan, viâ Shanghai, and also for an extension of the circular tour arrangements to include the Shanghai-Dairen steamer line of the South Manchuria Railway. It is expected that full arrangements for these facilities will soon be completed and the tickets placed on sale.

A more ambitious programme was provisionally agreed on at a special conference held in Tokyo in April, 1918, at which, in addition to the railways, the Pacific steamer lines were represented. Draft arrangements were then drawn up for the sale of through single tickets between China and the ports on the Pacific coast of America, also for an extension of the circular tour arrangements to cover the Pacific routes and to include Manila as well. The effect of the war on Pacific shipping facilities has, however, unfortunately prevented the realization of the programme up to the present time but it is hoped that conditions will soon be favorable for the inauguration of the arrangements.

Through Traffic with Chinese Eastern Railway

The arrangements for this through traffic come to at the Conference held in Tokyo in April, 1913, were brought into force on January 1, 1914, when through tickets were placed on sale between Peking and Tientsin and Harbin

Shanhaikuan was later added to the list of stations. This traffic continued in operation until November 30, 1917, when the effect of the war on the Chinese Eastern Railway arrangements made it necessary to suspend it. It has not up to the present been resumed.

Trans-Siberian International Through Traffic

As a result of the admission of the Peking-Mukden Line to participation in this traffic at the conference held in Moscow in inauguration of the sale of through single tickets, registration and arrangements made for through registration of baggage from Peking and Tientsin to Berlin, Paris, and London from June 1, 1914. The traffic had thus only been inaugurated two months when the outbreak of war made it necessary to discontinue it.

Chinese Government Railways Domestic Through Traffic

The result of the conference of the different lines already referred to as held in Tientsin in October, 1913, was the inauguration of the sale of through single tickets, registration and insurance of baggage and booking and insurance of parcels between the principal stations of the Peking-Hankow, Peking-Suiyuan, Peking-Mukden, Tientsin-Pukow and Shanghai-Nanking Lines from April 1, 1914. The Shanghai-Hangchow-Ningpo Line came into the arrangements later.

The through traffic is at present confined to the lines mentioned, but the arrangements have been extended and perfected at subsequent conferences and now include the sale of return tourist tickets at reduced fares to places of interest, circular tour tickets covering the route Peking-Hankow-Shanghai-Nanking-Tientsin-Peking, and the introduction of the C.O.D. system for parcels booked through.

The clearing of the accounts and division of the receipts from this traffic, as has already been remarked, forms part of the duties of the Railway Clearing House Division of the Railway Through Traffic Administration. The stations on the different lines submit their returns of through traffic to the Railway clearing house through their accounts offices and the Railway clearing house conducts the full audit of these returns thus relieving the different accounts offices of a considerable amount of work. This method also leads to a saving of expense as the audit of these returns and division of the receipts can be done much more economically in a central office than by each railway acting independently. The Railway clearing house furnishes monthly to each line abstract statements of its shares of through traffic ready for inclusion in its accounts. The railways have the right to appoint an auditor to check the work of the Railway clearing house at any time.

It is expected that the control of exchange of rolling stock between the different lines will soon be centralised in the Through Traffic Administration with beneficial results.

Many other steps have also been taken with the view of unifying methods on the different lines participating in the through traffic arrangements.

The fruits of these are not yet evident in working but the results of the progress already made will appear in course of time. This article would not be complete without some reference to what the future holds in regard to the through traffic arrange-

ments of the Chinese Government Railways. A recapitulation of the past has been given in which it has been made evident that the great world war has circumscribed activities in regard to the relations of the Chinese lines with the systems of other countries.

The war being now happily over it is expected that as conditions become stabilised activities suspended on its account will be resumed.

The situation in regard to trans-Pacific relations has already been dealt with. In addition to the early inauguration of the through traffic with the Pacific coast of America it is confidently hoped that in the not very distant future the traveller to New York, Chicago and other American cities will be able to go to Peking station and buy his ticket right through to his destination. He will hand in his baggage, get his receipt for it and receive it again at the conclusion of his journey.

The opening of the trans-Siberian route will be the signal for the resumption of activities in regard to the international through traffic to Europe. The pre-war arrangements made by the Chinese Railways only touched the fringe of this traffic; new arrangements will be much more extensive and varied.

In regard to through booking arrangements to towns in Russia and Siberia, negotiations for these facilities had reached a favorable conclusion at the outbreak of war. This event, of course, made it impossible to proceed further but the question will again come to the front when the Trans-Siberian Railway resumes operations.

With reference to domestic intercommunication that has to the present been confined to passenger traffic, but, as has been pointed out unification of methods has been proceeding in the meantime. This will in the near future make possible arrangements for goods traffic as well and gradually lead to the Chinese lines working together as one system with uniformity of arrangements. Much has been done in the past few years towards this result, much yet remains to be done, but the experience of the past in surmounting difficulties makes the future outlook bright and promising.

Japanese Claim More "Compensation" from China

Exclusive Interests in Manchuria and Mongolia Demanded by Militarists

It is too early yet to know what is going to be the final attitude of any Power to the proposed reorganization of the Consortium, but an interim comment on Japan's position has been made in two Reuter's telegrams from Tokyo, with originating dates of August 14 and 15 respectively, published in Peking on August 15 and 16. The earlier of these two messages says opinion in Tokyo was divided as to what Japan's attitude on the matter would be, Viscount Uchida, the Foreign Minister, and his supporters standing for joining the Consortium without any reservation in consonance with the British example, and not fearing the loss of any rights in Manchuria and Mongolia and even going to the extent of not making reservations thereanent. The other side, "strongly supported by the militarists" says the telegram, contended that Japan had already made sacrifices in arresting the Russian aggression, and "the rights thus secured" deserved international recognition. Consequently it was "only right and proper that they be secured by a clause thereanent in the new Consortium which as it stands carries a tendency to deprive China of her financial independence by ultimately placing her finances under the control of the Powers composing the Consortium. Japan can never be a party to anything tending to curtail China's absolute independence or invite international complications endangering the peace of the Far East." The same telegram told us that the Special Diplomatic Commission had sat in consideration of the matter and had reached no decision, but another session would soon be held, and "indications pointed to a decision unfavorable to the supporters of Viscount Uchida." Within twenty-four hours comes the second telegram stating that, "A Cabinet meeting yesterday (August 14, the second anniversary of China's entry into the War) decided, in view of Japan's special rights and interests, to demand the exception of Manchuria and Mongolia from the purview of the financial Consortium. It is believed that the Japanese embassies at Washington and London have been instructed to this effect." It is thus seen that the militarists have secured their own way. There are many points from which this decision might be viewed. It might be considered from the point of view of its indication of militarist supremacy in Japan even over what is supposed to be a democratic Cabinet. It might be viewed as a left-handed Japanese contribution to the maintenance of the peace of the Far East; and so on. Here, and at this juncture, we shall concern ourselves with three points: The fact that the decision taken seems to depend on certain unknown rights and privileges; the historical background of the decision; and the essential implication of the decision.

It will be noticed that the earlier message, obviously well informed, for its two predictions were fulfilled within twenty-four hours, speaks of the militarist contention that Japan had already made sacrifices in arresting the Russian aggression, which menaced the peace of the Far East, and argued that "consequently it is only right and proper" that "the rights thus secured" deserve "international recognition." These phrases suggest, indeed almost imply, that in return for the assistance given to Kolchack, Semenoff, and others, the Japanese have secured certain rights which at present are not internationally recognized. This has been rumored for a long time, but this is the first explicit reference to the matter, as far as we are aware, if our interpretation be correct—and we see no other interpretation to be placed on the phrase used. It would seem that before the Powers proceed any further in this matter they should demand from Japan exactly what rights she has secured by "making sacrifices in arresting the Russian aggression." If they are rights in Russian Siberia, then they have no weight as applied to a Consortium for China, and are of no interest to anybody except Russia. The world has a right to know just what rights Japan believes herself to have.

The second point of our immediate reference is the historical background of the decision, and the question how far the strokes that Japan is now adding to the picture harmonize or clash with the background, are in consonance or in conflict with it. The elements of consonance may be taken first. Assuming for the sake of argument that Japan has in some way or other acquired special rights in Manchuria and Mongolia, there are four precedents with which a Japanese exclusive policy would be in accord. The first dates back to the era of the scramble for concessions, and takes the form of an exchange of notes between Great Britain and Russia at St. Petersburg on April 28, 1899, whereby Great Britain and Russia, animated by a sincere desire to avoid in China all cause of conflict on questions where their interests meet, and taking into consideration the economic and geographical gravitation of certain parts of the Chinese Empire, agreed as follows:—

(1) Great Britain engages not to seek for her own account or on behalf of British subjects or others, any railway concessions to the north of the Great Wall of China, and not to obstruct, directly or indirectly, applications for railway concessions in that region supported by the Russian Government.

(2) Russia on her part engages not to seek on her own account, or on behalf of Russian subjects or others, any railway concessions in the basin of the Yangtze, and not to obstruct, directly or indirectly, applications for railway concessions in that region supported by the British Government.

One further subject, upon which information is now available, should tempt the Ministry of Communications into some affirmative action. That is the subject of employees. The last table in the report gives the number of employees in each department by lines. The discussion upon it relates that there are difficulties in the way of absolute certainty in classification. But certainly there is little likelihood that a head office clerk will be classified as locomotive mechanic. And why, for example, should the Kaifeng-Honan require 124 men and the Chuchow-Pinghsiang require 112 men per 100,000 train kilometres for repairs to rolling stock when the Shanghai-Nanking gets along with 48 and the Tientsin-Pukow with 45? The standard of repair will not account for the difference. Why does the Peking-Mukden require 5.5 men per kilometre of line to keep its roadway in repair when the Cheng-Tai can do a much more difficult piece of work and do it just as well with 2.6 men? Every department will yield similar queries. There may be reasons for some of these disparities, but does the Ministry of Communication know what they are? We venture the assertion that this is the first intimation which the Ministry has had that they existed, let alone the reason for them. It will be interesting to watch whether or no the Government will exercise the power which this information puts into its hands for the purpose of regularizing these conditions, and if it does how it will go about it. To simply order a reduction of forces upon a given railway so as to put it in line with other roads would be to involve the road in question with consequences as serious as those to the occupant of the procrustean bed. On the other hand it is not unlikely that some enterprising department chiefs who find their forces averaging low will see in this tabulation an opportunity for the appointment of additional friends and relatives. Information is dangerous if not used wisely. What should follow is a careful study of the organization upon each line so as to bring to each department of each line the best experience of the best organized department in the entire system. There is scarcely a single railway upon which there is not at least one department which compares badly with the same department upon some other line. This points the way very clearly to the necessity for professional conventions of the heads of similar departments under the auspices of the same respective division of the Ministry of Communications for an annual exchange of opinion and experience.

The more significant statistics for the year are as follows:—

	Total.	Per kilometre of line. 1917.	1916.	1915.
Investment Assets	$411,616,123	$75,514	$75,402	$75,225
Operating Revenues	63,873,703	11,713	11,425	10,477
Operating Expenses	30,040,564	5.509	5,250	5,556
Operating Ratio	47	(1916-46)	(1915—53)	
Net Operating Revenue... ...	33,833,139	6,204	6,175	4,921
Surplus after Fixed Charges ...	21,630,195	3,948	3,773	1,841
Train Kilometres	21,374,253	3,918	3,975	3,763
Locomotive Kilometres	31,683,464			
Passengers Originated	23,615,329	(1) 4,331	5,217	4,633
Passenger Kilometres	2,128,327,372	390,302	375,827	349,160
Average Passengers per train ...	211	(1916—201)		
Average rate per passenger kilometre	1.07 cents	(1916—1.06)		
Tons of Goods Originated ...	16,475,216	3,021	3,031	2,720
Ton Kilometres	2,766,840,594	502,507	476,969	413,289
Tons per train	244	(1916—227)	(1915—206)	
Average rate per ton kilometre...	1.29 cents	(1916—1.33 cents)		
Kilometres of Line operated ...	5,453	(1916—5,492)		

(1) Decrease due to absence of Canton-Samshui figures.

The World Port for Central China

In our last issue, in Dr. Sun Yat-sen's series on the Development of China, the subject of a great port for Central China was mooted. As our readers will remember, the case for a Yangtze estuary port was first presented in the "Report of the Future Development of the Shanghai Harbour" by three experts, issued in April, 1918, by the Whangpoo Conservancy Board in which China's urgent need for a "World Harbour" in the neighborhood of the Yangtze Estuary was convincingly proved.

The Whangpoo Conservancy Board in April this year announced that, on the recommendations of the above report and on the request of the consultative Board and of the various Commercial Bodies in Shanghai, the Board has decided to carry out an investigation which will include all possible schemes for a first class port. The various projects which Dr. Sun now puts forward are already in principle embodied in the programme of investigation which the Board has published. (See our issue of April, 1919). His two main schemes, a harbor on the southern bank of the Pootung Peninsula and the training of the "North" or Shaweishan Channel of the Yangtze, are definitely covered in the investigation. His notion of a wet dock in the lower Whangpoo was also foreseen. A scheme to make on the Hangchow Bay a *port de vitesse* was definitely formulated by one of the reporting experts, Mr. P. G. Hornell, as early as in August, 1917. As to the scheme for deviating the Whangpoo by joining the Seven Mile Reach to Kaochiao, thus cutting out the whole of the present harbor, and leaving alone its evidently enormous cost, we cannot imagine any idea, which, if carried out, would more effectively fail to make use of and destroy all the interests vested in the present Shanghai water front. In considering the question and possibility of realizing a large ocean port scheme for Central China, we feel that one cannot afford to overlook the fact that the trade, business and enterprise of Shanghai and its vested interests form the only possible nucleus and guarantee for such a scheme. In case the deep water port cannot actually be developed at and within the actual limits of present Shanghai, it must at least be directly connected with Shanghai and serve as its new harbor for deep draft ships. Any scheme which does not take this into consideration will always belong to the *chateaux en Espagne*, and not to the realm of reality.

In the meantime, it is as well to consider the subject as *sub judice*, as the investigation of the Board, which is now proceeding, covers within the widest range all technical possibilities for a Central China Port. The results will be submitted to an International Committee of engineers of high repute from the home countries, and there is very little gained by anticipating the results. It is, however, very promising to find Dr. Sun as an advocate for a well-defined and largely conceived harbor and communication system for China—and, while he may leave the actual technical solutions to the experts and engineers, it is hoped that he will make his countrymen realize the need for something being done, before it is too late, for the ocean-borne trade and shipping of China.

A New Sino-French Enterprise

The *"Societe Franco-Chinoise de Constructions Metalliques et Macaniques (Kiou-Sin)* opened its offices in Shanghai on June 1, 1919, marking the beginning of the career of another important Sino-French enterprise. This company is capitalized at Shanghai Tls. 1,200,000, the Chinese Government furnishing half of the sum, viz., Tls. 600,000, and the Messageries Maritimes Co. and the Schneider Co. of Paris, the other half. The capital has now been fully paid up. The project was promoted by the Schneider Co. to take over the Kiou-Sin Engineering Works of Shanghai owned by Nicolas Tsu, a Chinese Engineer. After taking over the Kiou-Sin Engineering Works, the new company plans to enlarge their plants and extend the scope of their business. The Company has twelve Directors, six of whom are Chinese. The Peking Government has designated six prominent Chinese business men as Directors of the Company. Mr. Bridou, Agent General of the *Messageries Maritimes pour l'Extreme Orient*, is General Manager, and Mr. Wei Han, formerly Director of the Foochow Docks, is Assistant General Manager of the Company. The main business of the company is shipbuilding, but it will also engage in the manufacture of engines and machinery. It has taken over all the property of the Kiou-Sin Works and now occupies the whole of the old site.

OCTOBER, 1919

VOL. XV. No. 10

BINDING COPY.

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

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INVEST IN CHINA!

TRADE TRIBULATIONS IN KANSU

CRIMINAL CODE OF THE REPUBLIC OF CHINA

UNKNOWN CORNERS OF KOREA

OF GLOBE TROTTERS

A Ningpo Junk

of Peking which is not defaced by inscriptions and dates, and a few persons of little education have added obscene remarks. This habit is as silly as it is ugly. It was objectionable when only foreigners went sight-seeing, but now that the Chinese go in greater numbers than foreigners it is doubly so, as they have adopted the practice and for every inscription by Messrs. Smith, Brown, and Robinson there are ten by Messrs. Li, Wang, and Chang. If it is within their power they make their record bi-lingual, as

"6th August, 1919
Mr. Yuan Chien-hsun
Mr. Jam Tien-sin
Mr. Ching Chang-ming
Mr. Li Liu-che
all came to here in a fine weather."

A more serious evil, the effects of which can be seen at the Summer Palace, is the habit of stealing souvenirs. All the ridge-end decorations, consisting of little glazed earthenware dogs, lions, and horsemen, which could be reached from the galleries on either side have been stolen by tourists. This is only possible in a country where the guardians of the exhibition places are feeble old men endowed with no authority, ill paid, and in a deadly fear of foreigners. The effect is lamentable.

Senseless destruction appears to be one of the results of beauty on the ignorant. In many places can be seen the traces of wanton damage which can have given no one any profit. No souvenir hunter collects chips of marble. The Yellow Temple shows the most distressing traces of the vandal in the irreparable damage done to the beautiful marble stupa erected by the Emperor Ch'ien Lung in memory of the Dalai Lama who died in Peking in 1784. The lower portion of the monument was carved in relief with scenes representing the death of the Dalai Lama, and nearly all the faces were knocked off by the troops of "a certain nation" in order to show, presumably, that the Boxers were not the only barbarians. In many other places unfortunately similar acts have been committed. Why, it is difficult to guess. Just as children delight in breaking things, so apparently do a certain class of men.

Advice to Globe Trotters

1.—Write your name and the date of your visit on all monuments. This will interest other visitors, who will be surprised and pleased to learn that you can write.

2.—Do not be afraid of pushing into any rooms or buildings to which the public are not admitted. Remember that the owners are, after all, "natives" and it is your duty to the higher civilization you represent to impress them with the fact.

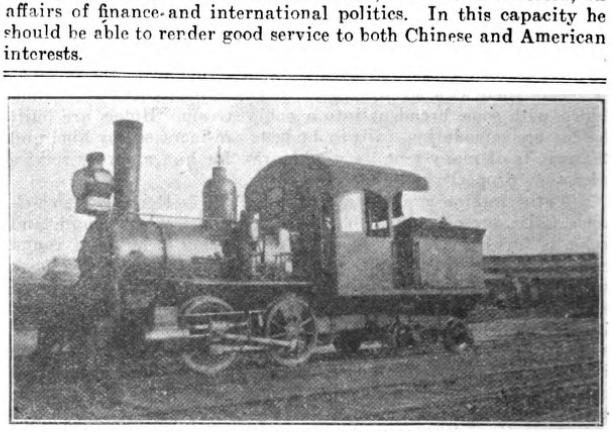
3.—Do not fail to commit any acts of petty theft which would in your own country land you in the penitentiary. Your privileged status as a Treaty protected foreigner will enable you to bluff through, and you can give an extra twenty cents to the Chinese caretaker, who dare not say what he thinks. Remember Treaties confer privileges, not responsibilities.

4.—Do not be influenced in your actions by any consideration for other people. If after your visit some of the decorations are missed, by subsequent visitors, that is their fault for not having come before.

5.—Do not trouble to remove the traces of your meals. Leave the paper in which your sandwiches were wrapped where it lies.

A tourist says to me:—"You are unfair and unjust. Globe trotters are not the race you make them out. To begin with, I have been equally irritated with you at the number of fools who have written their names on walls and monuments. But I noticed that the majority of the names were those of men who were certainly not globe trotters, and might be classed among your privileged race of superior beings, the residents in Peking. Most of the names belong to members of the various Legation Guards. As to ignorance of the country, and silly remarks which may try the hearer, it is not possible for a man who wishes to see something of the world to devote the previous twenty years to the study of the countries in which he is going to travel. And as to the other members of the party, they are more interested in beauty either natural or architectural which makes a simple appeal to them, without needing the assistance of technical knowledge. I admit that comparisons are odious, but sometimes human nature is weak. Now you have said what you think of globe trotters from the Chinese point of view, and I should like to say what I think of the way the Chinese keep their country from the globe trotters' point of view. I pick up a paper, and in any part of it I am sure to find articles written for or by the Chinese descanting on the way they are treated, and asking for the remission of the binding clauses in Treaties of which they complain. But so soon as I left the first Treaty port in which I landed I found that I had left any sort of modern civilization behind. There would be nothing but land to let in treaty ports if China were anywhere near what her publicists make out. You do admit that the majority of the public monuments are decayed and neglected, but you do not say to what extent the damage has gone. The Ming tombs, one of the most wonderful sights in the world, are going to disappear altogether unless something is done. The Temple of Agriculture is being made into a beer garden, with billiard tables in the pavilions. There is a soda factory at the jade fountain. And everywhere there is nothing but graft and greed as far as the tourist can see. The priests are allowed to charge admission at the Lama temple, but no one sees that the money is spent in any repairs to the buildings. Part of one of the buildings has already fallen in, and if one climbs up to the level of the Big Buddha's head one can see that only the solidity with which the original builders built has kept the place going as long as it has. You try to make out that what is wanted is sympathy and a better understanding. So far as I can see what is wanted as far as the show places of China are concerned, is someone with a shot gun to attend to the keepers of them."

After six years of intense activity as American Minister at Peking Mr. Paul S. Reinsch retired and left for America on September 13 last. His departure was the occasion of many demonstrations of friendship and regard on the part of the Chinese, both officials and civilians. Various Chinese organizations entertained the departing Minister and speakers gave unstinted testimony of the appreciation felt by the Chinese for the efforts Mr. Reinsch had from time to time put forth to assist them and their causes. The warmest eulogies were also spoken by American citizens, who regard Mr. Reinsch as perhaps the most active Minister they have had in China. He always had time for the consideration of any question calculated to advance American interests, and was approachable to anyone connected with such interests at almost any hour of the day or night. Among other nationals Mr. Reinsch was held in high regard for his scholarly attainments, and at the railway station on the evening of his departure there was a large international gathering to bid him bon voyage and to testify to the popularity in which he was held. Although the retiring Minister leaves China he does not sever himself from her interests, and she is to be congratulated upon having secured his services as an adviser, resident in America, on affairs of finance and international politics. In this capacity he should be able to render good service to both Chinese and American interests.



FROM THE SUBLIME TO THE RIDICULOUS

A former locomotive which graced the Manhattan Elevated Railway in its day, has, for some time, being doing the humble work of a switching engine on the short railway between Canton and Samshui, South China. The photo is by courtesy of the U.S. Bureau of Foreign and Domestic Commerce.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Board of Trade's Forecast.—According to a telegram from London, the Board of Trade Journal says that from the investor's viewpoint the prospects of railway development in China are promising and that even proposals which themselves are not attractive may be in a much stronger position when they form part of a comprehensive railway system. The Journal adds that it may be expected that 50,000, or even 100,000 miles of railway will be built in China during the next quarter of a century, linking up all the principal ports.

Government Railways Construction Plans.—The Japanese Government Railways propose to complete eight new sections, 129.9 miles in length, this fiscal year. This will bring the mileage of the state lines to 6,169 miles. In addition there are 127 private lines, including 126 light railways and one standard gauge steam railway. The Government Railways have granted a permit to the Katagami Light Railway Company for the construction of a steam light railway, 11.72 miles in length, in Okayama prefecture.

Shanghai Tramways.—Figures for August were as follows :—

	August, 1919.
Gross receipts	$185,598.05
Loss by currency depreciation... ...	47,166.68
Effective receipts	$138,431.37
	August, 1918.
Gross receipts	$143,968.56
Loss by currency depreciation... ...	33,487.85
Effective receipts	$110,480.71
	Eight months ended August, 31, 1919.
Gross receipts	$1,327,054.46
Loss by currency depreciation ...	328,296.78
Effective receipts	$998,757.68
	Eight months ended August 31, 1918.
Gross receipts	$1,101,441.51
Loss by currency depreciation ...	246,664.98
Effective	$854,776.63

The figures for August are the record, no less than 8,502,942 passengers having been carried. The traffic now carried on the 17½ miles of route is the heaviest known on any tramway system. Recent weekly figures have been as follows :—

Week Ending	Gross Receipts	Loss by Currency Depreciation	Effective Receipts
September 3 ...	$42,636.81	$10,841.99	$31,794.82
September 10 ...	44,485.61	11,378.03	33,107.58
September 17 ...	43,666.28	11,081.07	32,585.21
September 25 ...	43,638.67	11,061.86	32,576.81

Canton Tramway.—A Chinese paper reports that the Kwangtung Tramway Company, the syndicate which has the concession for the construction of tramways in Canton, has already paid $200,000 of the $1,000,000 bonus which it has agreed to pay to the municipality. As soon as the municipality has prepared the new roads, made available by the destruction of the city walls and by other means, the laying of rails will begin.

Railless Freight Service for Shanghai.—The Shanghai Tramways plan the inauguration of railless electric car service to link up the important industrial localities and freight collecting and distributing centres in Shanghai. The establishment of a freight service by railless cars equipped to run either by power from overhead trolley wires or batteries will be the first step taken to eliminate the wheelbarrow and coolie-hauled cart from the streets of Shanghai. It is understood that the complete program for the inauguration covers a period of three years, which will see steel bridges built over Soochow Creek at several points. The railless cars would take their power from the overhead lines of the tramways, but use batteries for running up streets not equipped with trams and up to godown doors, etc.

Electric Line for Kwangtung Province.—It is reported that a company will soon construct an electric car line between Dairen and Port Arthur. The capital of the proposed company will be two million yen. The line is to be 25 miles in length—much shorter than the present railway line. The proposed fare is 75 sen per trip.

SHIPPING

New Company in Chungking Trade.—The Szechuan Steamship Company has put its first steamer into the Chungking trade, under the British flag. The Chungking-Hankow trade is booming. One company charges Tls. 35 per ton for freight and $160 for passage west, or half that amount for eastbound passage; for, of course, the trip through the rapids is made in less time on the eastbound voyage.

Fast Ships for Nagasaki-Shanghai Run.—The Nippon Yusen Kaisha is making arrangements to operate two new passenger ships between Nagasaki and Shanghai. They will cover the distance in 26 hours, or ten hours less than the time now taken.

Japan's Merchant Fleet.—According to returns published by the Shipping Control Bureau of the Department of Communications, the total number of Japanese ships of over 1,000 tons each on official record at the end of June, 1919, was 734, aggregating 2,263,225 tons.

Higher Pacific Fares.—The Pacific Mail, the Canadian Pacific, and the Toyo Kisen Kaisha have raised their passenger fares to G.$312.50 from Hongkong, G.$288 from Shanghai, and G.$250 from Yokohama, to their respective ports of call in North America. The rates on intermediate steamers are now G.$244, G.$224, and G.$187, respectively. The first-class fare from Hongkong was formerly G.$250.

Increased Freight Rates.—The unsubsidized steamers of the N. Y. K., O. S. K. and T. K. K. have raised their rates from Japan to North America to $14-$15 per ton, gold. A further increase is expected.

New Ship for China Merchants.—The *Kwangkieng*, a vessel of 12 knots speed and a registered tonnage capacity of 2,549, has been completed at Tientsin for the China Merchants Steam Navigation Co. She is to take the place of the *Kiangkwan*, which was sunk following the collision with the Chinese gunboat *Chutsai*.

Pacific Mail Enlarges Fleet.—As a result of a recent purchase of four 9,000-ton freighters to ply between San Francisco and Baltimore, via Panama and Central American ports, beginning in December the Pacific Mail Steamship Company will accept cargo at Shanghai destined for all ports of call of the new ships, with transhipment at San Francisco.

New Ship for Upper Yangtze.—The *Hungkiang*, which was bnilt at the Nicholas Tsu yards for the Yangtze rapids trade, underwent her speed trials recently and attained 13.9 knots. The vessel, which is owned by the Szechuen Navigation Company, recently departed from Shanghai to be placed on the run between Ichang and Chungking.

Japanese Ship Calls at Hamburg.—The *s.s. Taiyo Maru*, owned by the Goko Shokai, under charter to the Kuhara Shipping Department, put in Hamburg from Batavia in August with 4,000 tons of copra. She is the first Japanese boat visiting a German port after the war.

The Admiral Line Fleet.—The fleet of the Admiral Line, the American shipping line which recently opened offices in the Far East, consists of 104 vessels. The U. S. Shipping Board has recently transferred to the Admiral Line the vessels flying the Barber Line flag, for which Messrs. Dodwell & Co. were the local agents.

DEPT. OF COMMERCE
DEC 13 1919

NOVEMBER, 1919

THE FAR EASTERN REVIEW

VOL. XV. No. 11

BINDING COPY

ENGINEERING FINANCE COMMERCE

遠東時報

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The Far Eastern Review

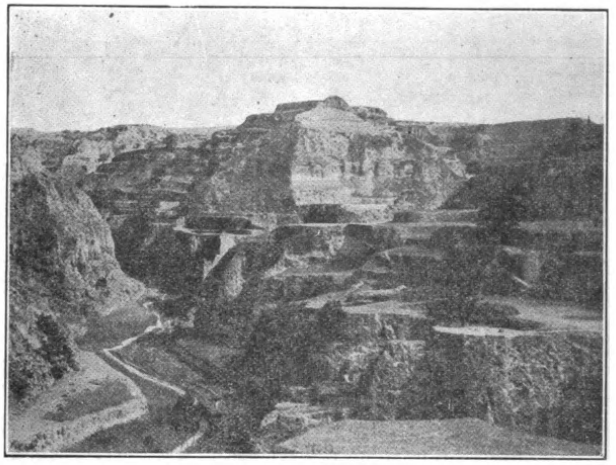
ENGINEERING FINANCE COMMERCE

VOL. XV SHANGHAI, NOVEMBER, 1919 No. 11

The Development of China's Central Provinces

The Importance of the Lunghai Railway

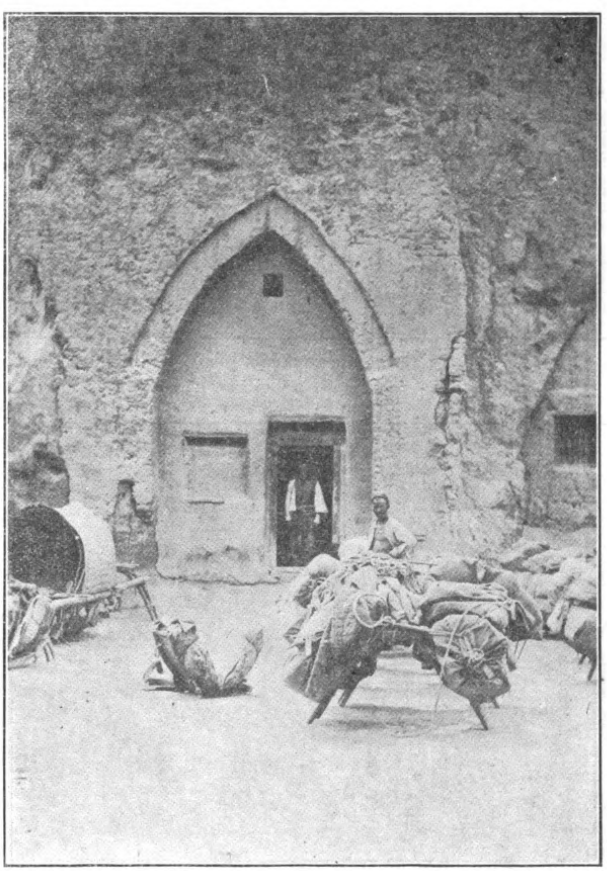
If China were to be developed according to a comprehensive plan, the Lunghai Railway, of which only about 350 miles out of 1,600 have been constructed, would have a first claim on the limited financial resources at present available for the purpose.



A LOESS CANYON TERRACED FOR CULTIVATION. THE COUNTRY TRAVERSED BY THE RAILWAY IS SCORED BY MANY SUCH

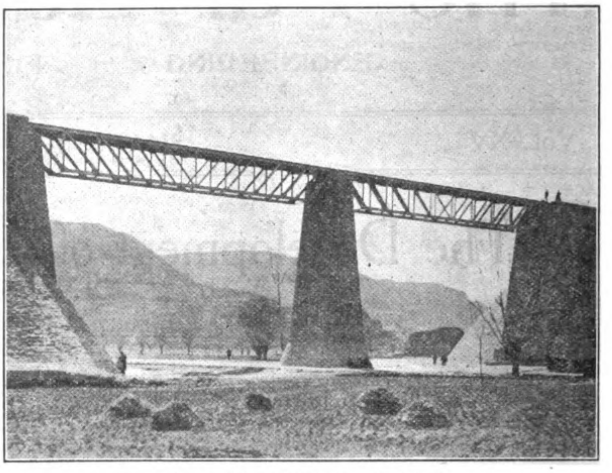
The urgency of completing the line is determined by its unparalleled importance from a strategical, political and economical point of view. Starting from the sea in the vicinity of Shanghai it will traverse the whole of China, between the Yangtze and the Yellow Rivers, from east to west; gaining access to the Western Provinces through the historical and most practicable pass of Tungkwang. The Lunghai crosses the two main lines running North-South, the Tientsin-Pukow and the Peking-Hankow, each about 800 miles long. The third main line running in the same direction, viz., the Tatung-Chengtu Railway, which has been contracted for, but on which construction has not yet been started, will also be crossed about half way by the Lunghai. A glance at the map suffices to show the extremely favorable geographical position of the latter. In the April, 1913, number of the FAR EASTERN REVIEW, we described the country traversed by this railway. As to the natural resources of the regions which will be dependent on it for their import and export trade, and therefore for their modern industrial development, the teeming millions they already sustain are sufficient proof of a considerable agricultural wealth; while coal, iron and other minerals are found in close proximity to the line. The provinces of Shansi and Shensi are known to contain coal deposits which are the richest in the world. At present the railway which has not yet entered Shansi, carries principally groundnuts, cotton, hides, tobacco and coal outwards, and tea, cotton goods and kerosene inwards. Production and trade generally have been given an impetus by the section of the railway so far operating which it is interesting to study, as showing what railway development will do in China.

The country about Kaifeng, the capital of Honan Province, is about the poorest traversed by the railway. The soil is very sandy and in ordinary years could only produce just enough to keep the population alive; any prolonged period of drought used to cause famine and there was no accumulation of wealth to fall back upon. It is no wonder that under the Ming Dynasty the Government felt compelled to issue

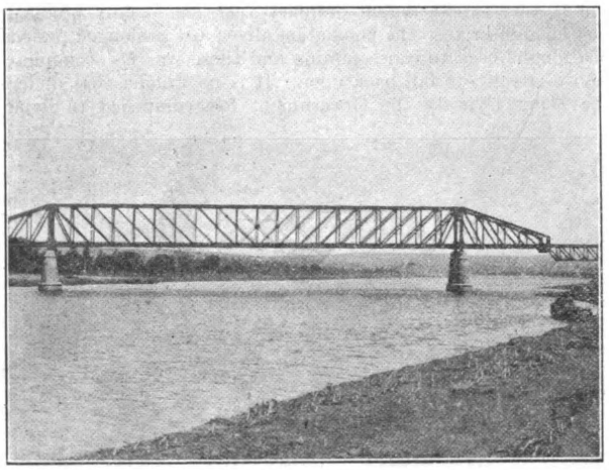


A CHINESE INN CARVED OUT OF THE LOESS NEAR SHENCHOW, HONAN. NOTE THE PACK SADDLES IN THE FOREGROUND. THEY ARE CONSTRUCTED SO AS EASILY TO BE DETACHED WITH FULL LOAD FROM THE ANIMALS CARRYING THEM

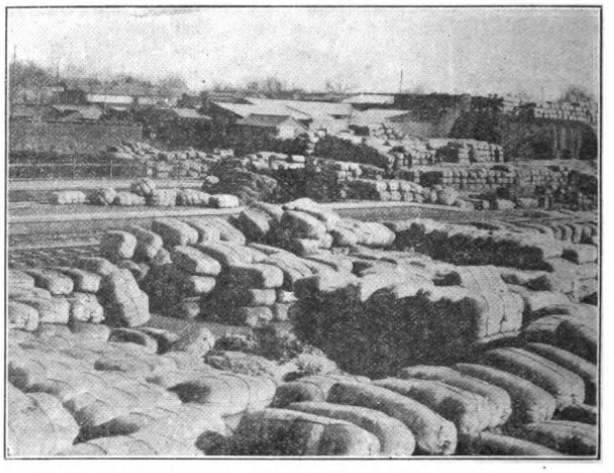
THE RAILWAY STATION AT KWANYINGTANG—AT PRESENT RAILHEAD OF THE LUNGHAI LINE IN HONAN



A BRIDGE 62 KILOMETRES FROM PIENLO

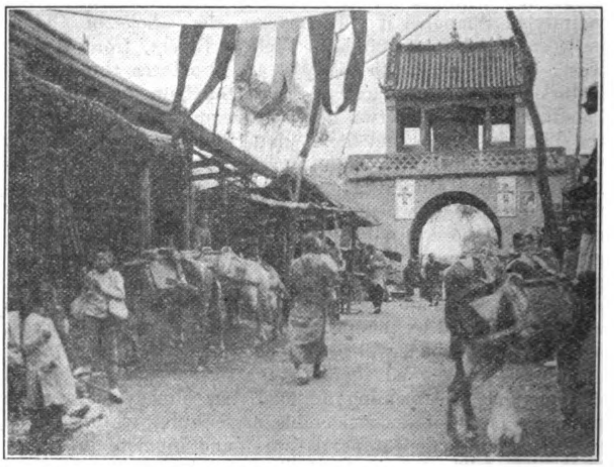


THE BRIDGE OVER THE LOHO



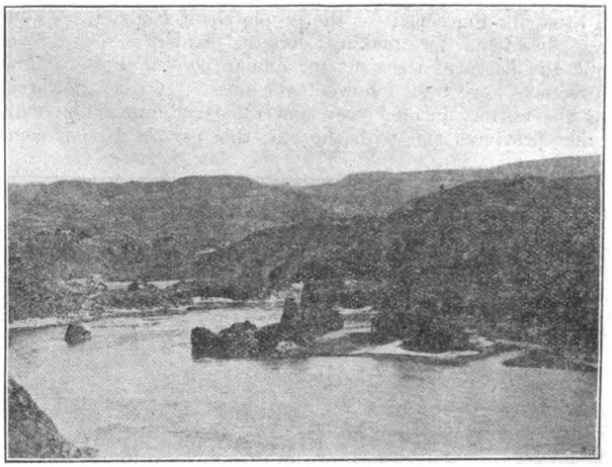
COTTON AWAITING SHIPMENT AT MIENCHIH, ON THE LUNGHAI RAILWAY

THE EASTERN GATE OF KAIFENG, THE CAPITAL OF HONAN PROVINCE

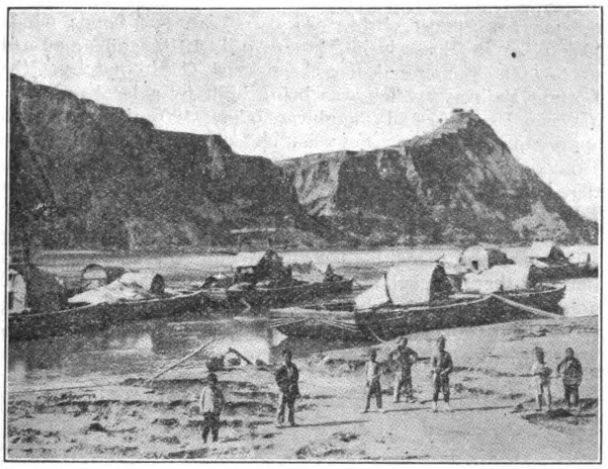


A STREET IN KUNGHSIEN CITY, HONAN

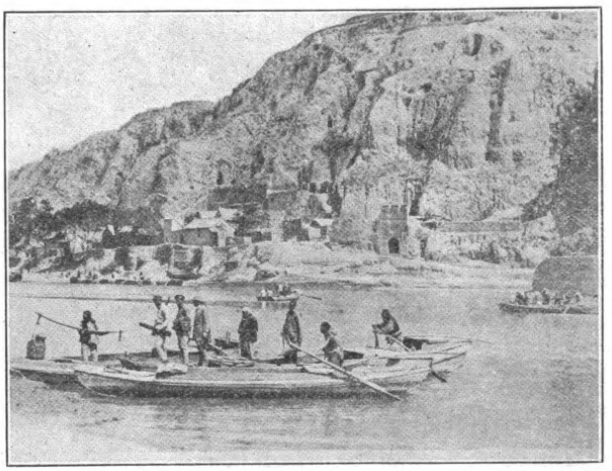
SANMEN RAPIDS ON THE YELLOW RIVER NEAR SHENCHOW



A VIEW OF THE SANMEN RAPIDS, NEAR SHENCHOW

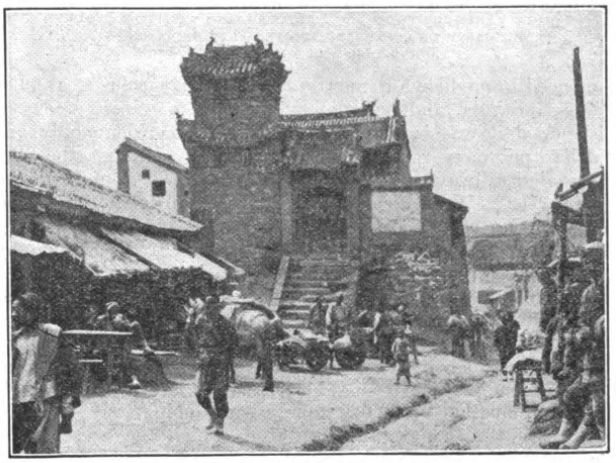


CARGO BOATS ON THE YELLOW RIVER AT SHENCHOW, HONAN



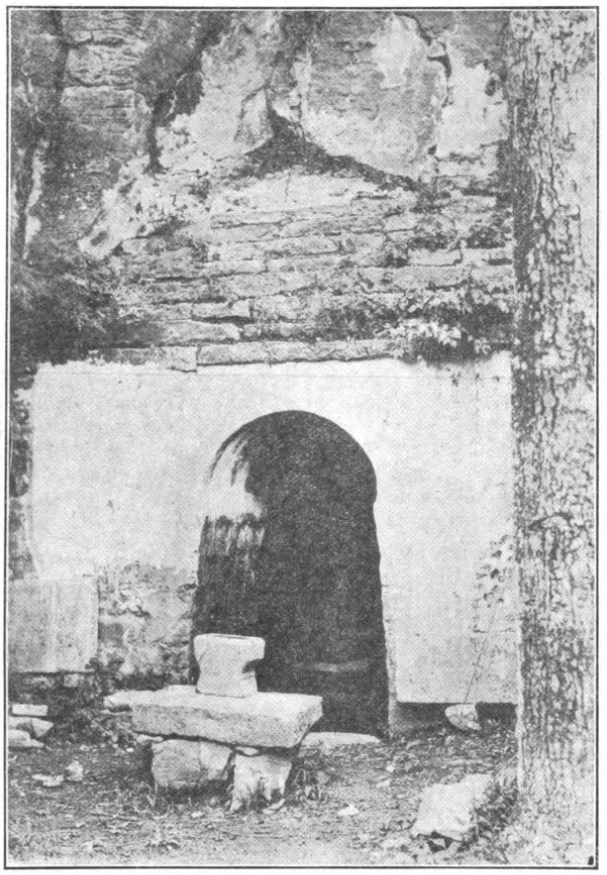
A SCENE ON THE LOHO. NOTE THE HOUSES CARVED INTO THE SIDE OF THE LOESS CLIFF

NORTH GATE OF HSUCHOWFU, KIANGSU PROVINCE. HSUCHOWFU IS THE JUNCTION OF THE LUNGHAI AND TIENTSIN-PUKOW RAILWAYS



A SCENE AT TZECHUNG, HONAN

a book, for the benefit of the people about Kaifeng, containing directions for making certain plants, mosses, roots and the barks of trees, fit for human consumption. These directions have been followed ever since. As soon, however, as the railway insured easy and rapid communication with other provinces and with the sea, this part of Honan com-

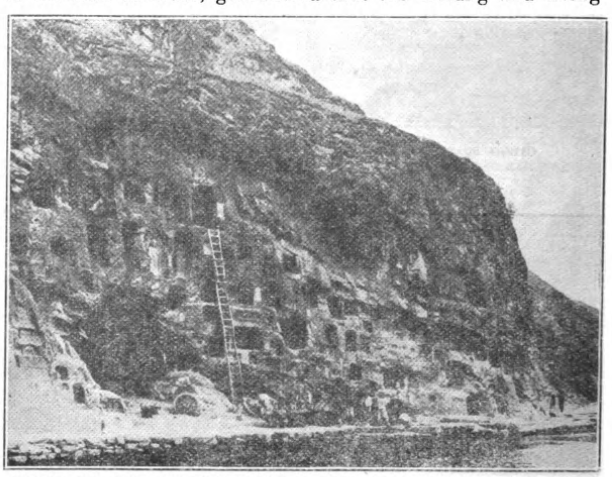


THE GROTTO AT SHAOLINSZE, NEAR SUNGSHAN, HONAN, WHERE BODHIDHARMA LIVED FOR NINE YEARS. HE IS CALLED TAMO BY THE CHINESE, AND WAS THE TWENTY-EIGHTH OF THE PATRIARCHS AND THE FIRST BUDDHIST PATRIARCH OF CHINA. HE ARRIVED FROM INDIA ABOUT A.D. 520 AND DIED ABOUT NINE YEARS LATER

menced to produce for export a considerable surplus of groundnuts (peanuts) and became rich enough to import stocks of the food it was lacking. Land which was worth only one dollar per mow rose to ten and twenty dollars, and the Lunghai railway carried about 54,000 tons of groundnuts the first year. We notice a similar development in the cotton trade. No cotton grown west of Honan could formerly be exported on account of the heavy cost of transportation by mule or wheelbarrow. At present large quantities of this product raised in Shansi and Shensi reach Hankow and Shanghai viâ the Lunghai, the Peking-Hankow line, and the Yangtze river. Another article which is being carried in increasing quantities by the railway is the salt taken from the famous lake of Hotung, in Shansi, about one-third of the total production of 90,000 tons a year going out by rail. Through the Tungkwan pass, from which the present terminus of the Lunghai is still about 30 miles distant, endless trains of mule-carts, wheelbarrows, camels and carriers, wind their way eastwards toward railhead. Swarms of junks discharge their cargoes coming from the west by the Yellow River and its great tributary, the Wei River (on which Sianfu, the capital of Shensi is situated) at the river port of Shenchow some distance above the Sanmen rapids.

It is imperative for the railway to reach Shenchow without delay in order to save the cost of transhipment and transportation by road. As is explained further on, once Shenchow is reached, the construction westwards to Sianfu will not present any great difficulties. The section through Kansu Province will tap the resources of vast regions now practically isolated and will ultimately reach Chinese Turkestan and the plains of Western Siberia. Although at the present time these remote territories are only sparsely settled and contain a large area of barren land, yet the route leading through them was chosen once by the great Jenghiz Khan when he invaded Europe with his numerous hordes which throughout their great march had to depend exclusively on local resources for their sustenance. Agriculture moreover is not always the principal factor to be considered when the time comes to figure out and determine whether a railway will pay or not, and there is good reason to suppose that great mineral wealth is hidden in the vast expanse of country between Lanchow and Siberia.

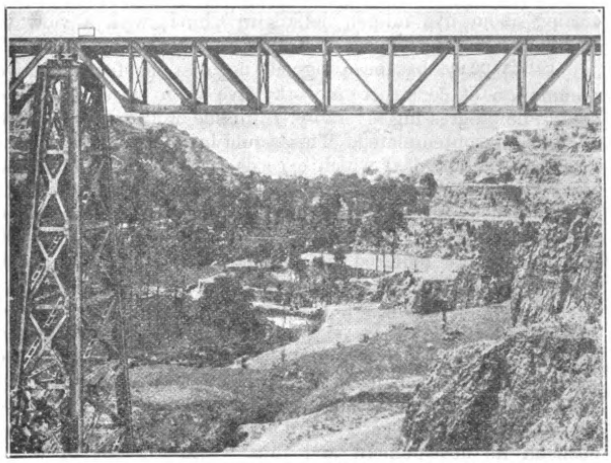
Owing to the war construction has proceeded very slowly on the Lunghai railway. Most of the work had been done previous to August, 1914. The first issue of bonds which took place in Brussels in March-April, 1913, and amounted to £4,000,000 nominal, has been used (1) to purchase the Lotung Railway, which was being built by a local company between Honanfu and Tungkwan (about 120 miles) of which approximately half is now completed, (2) to purchase the Tsingkiangpu railway of about 15 miles, another enterprise that had to be amalgamated, and (3) to construct the section between Kaifeng and Hsuchow, 150 miles. Including the Pienlo railway (115 miles) which was previously built under separate contract by the same Company, the completed sections of the Lunghai now have a total length of about 350 miles. Whereas the Chinese Government, which, according to the loan contract, guaranteed that the Lotung and Tsing-



SOME OF THE GROTTOES AT LUNGMEN. EACH ONE OF THOUSANDS OF GROTTOES ONCE CONTAINED IMAGES CARVED FROM THE ROCK. VANDALS HAVE STOLEN THOUSANDS OF THE STATUES AND SOLD THEM AS CURIOS

kiangpu railways would be merged into the Lunghai enterprise, exercised sufficient control over the Tsingkiangpu section to turn it over forthwith to the Lunghai administration, the case of the Lotung railway was much more difficult to handle. The Honan gentry, who were the shareholders of the company, were not easily persuaded to recognize the right of the Central Government to cancel railway concessions held by Chinese in the different provinces. The prestige of the Central Government was not very great just after the establishment of the Republic and it is said that the Belgian

Company, seeing that negotiations between the Government and the gentry made no headway, even proposed to drop them and to build an entirely new section parallel with the Lotung railway. It cannot be denied that the local Company had a good case and it was necessary for the late President Yuan Shih-kai, himself a Honanese, to use all his influence with his compatriots finally to arrange matters.



A MAGNIFICENT VISTA THROUGH A MODERN BRIDE SPANNING A LOESS RAVINE IN HONAN PROVINCE

As long as Yuan remained at the head of affairs none of those who were dissatisfied with the settlement of this question or were jealous of the influence acquired by his trusted assistants, dared to express their feelings, but after his death the part played by the Government in the liquidation of the different concerns which stood in the way of the unification of the railway system in China, was made the subject of criticism.

We need not dwell on this aspect of internal Chinese politics. What foreigners, who take an interest in the development of China, want to know is whether the capital invested in this country is safely and profitably invested. From this point of view the Lunghai enterprise promises to give entire satisfaction. The receipts of the first six months of the current year are $1,325,000, or, with Pienlo included, $2,195,000. The operation ratio being about 55 per cent. on an average, there is an ample surplus after deduction of the amount required for the service of both loans. The rolling stock of the Lunghai (350 miles) comprises 49 locomotives, 51 passenger cars, 28 luggage and mail vans, 405 freight cars, 15 horse cars, 145 ballast cars and 8 repair cars.

The line is of standard gauge, the rails weigh 42 kilograms per meter and are 12 meters long. Preference has been given to metallic sleepers over timber ones; they weigh 64 kilograms. All bridges have been designed for heavy trains (Russian type) so as to allow of the use of Mikado and Pacific type engines. The bulk of the freight cars are 40-ton cars, 13 meters long, with a small number of 20-ton cars. The locomotives are (1) for the passenger trains, ten wheels, of 1,600 h.p. capable of hauling 325 tons at 50 kilometers an hour, on 15 millimeter grades; (2) for the freight trains, consolidation engines of 1,600 h.p. hauling 600-ton trains at 15 kilometers an hour. These engines have tenders of 30 cubic meters capacity, weighing 56 tons, allowing of a run of 141 kilometers without refilling. The adoption of the heavy type of material has involved, of course, very high initial expense; but has the advantage of meeting all possible development of traffic and of insuring safety.

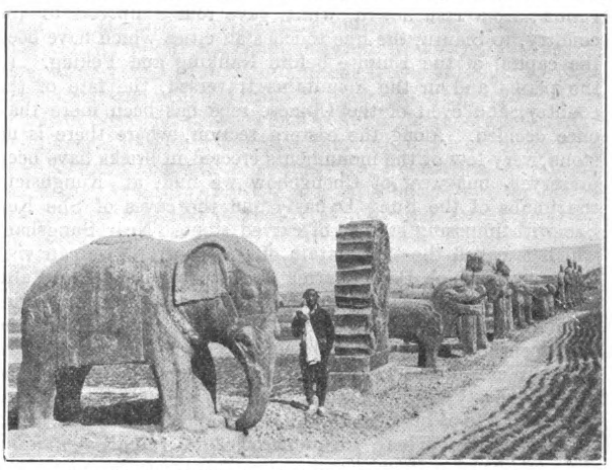
From the point of view of construction difficulties, the Lunghai railway, as projected, may be divided in three sections:

(1) The section between Chengchow and the sea, with a gradient below 6 millimeters per meter.
(2) The section between Chengchow and Fengsianfu, with a maximum gradient of 15 millimeters.
(3) The section between Fengsianfu and Lanchow with a maximum gradient of 25 millimeters.

On the first section there are few engineering difficulties; the country traversed is periodically flooded. The railway embankment runs at right angles to the streams coming down from the mountains of Shantung but ample provision has been made for bridges and culverts in order to prevent the embankment acting as a dam. Between Hsuchow and Kaifeng the railway follows for about twenty miles, the former bed of the Yellow River, then drops to a level about 25 to 30-ft. lower, to the south of this former bed, which acts as a protecting dyke. In the beginning of the nineteenth century the Yellow River reached the sea at a point south of its present mouth; in the year 1851 the river changed its course and it is quite improbable that it will ever flow again in the direction of Hsuchow.

The second section runs largely through loess formations, through which almost perpendicular cuttings can be made without any danger. The Loho river, an important tributary of the Yellow River, is crossed on a fine cantilever bridge. Over a distance of eleven miles, there are not less than eleven tunnels, varying between 50 and 475 meters in length. Between Honanfu and Kwangyingtang, the present terminus, the line skirts a torrential river and runs over embankments of from 30 to 40-ft. The cuttings here run through rock, where marlstone predominates, underlying coal seams cropping out at their bottom.

From Honanfu to Sianfu, the survey of the line is completed, and up to Tungkwan, at the bend of the Yellow River, the construction will be particularly difficult owing



PART OF THE AVENUE AT THE TOMBS OF THE SUNG EMPERORS, AT KUNGHSIEN, HONAN PROVINCE

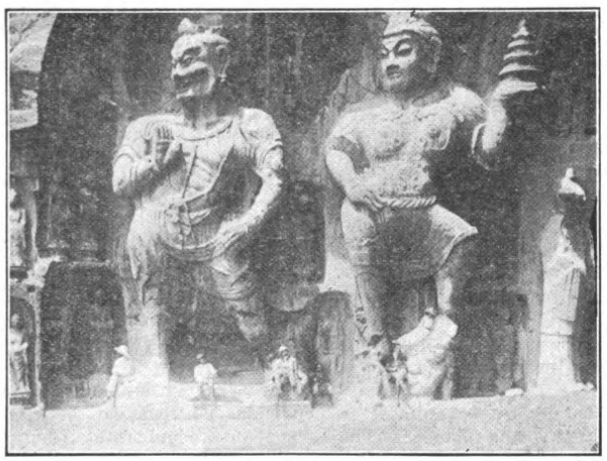
to the deep cuttings and the high embankments, and on account of the ravines and gorges which have to be bridged at a very great height; some of the bridge piers are 200-ft. high and the erection of the steel platforms of the bridges will present serious difficulties.

Much underground work will have to be done, and one of the tunnels near Lingpao, will have a length of two miles.

The third section, from Fengsiangfu to Lanchowfu is the most difficult one. A barometric survey and approximate determinations have been made between Sianfu and Lanchowfu in this section; steep gradients will be necessary, and

they will create working difficulties which can only be met by using articulated locomotives.

The greatest care has been taken to give to the line the highest possible capacity. The stations are located near the big centres, where the trade gathers. Between the stations,



HUGE STATUES AT LUNGMEN, HONAN PROVINCE. COMPARE THE SIZE WITH THE EUROPEANS AT THE BASE

numerous halts and crossings have been built, the sites having been selected after taking into consideration the difficulty of the line, and the speed and power of the locomotives, so as to get the maximum results that can be obtained with a single track system.

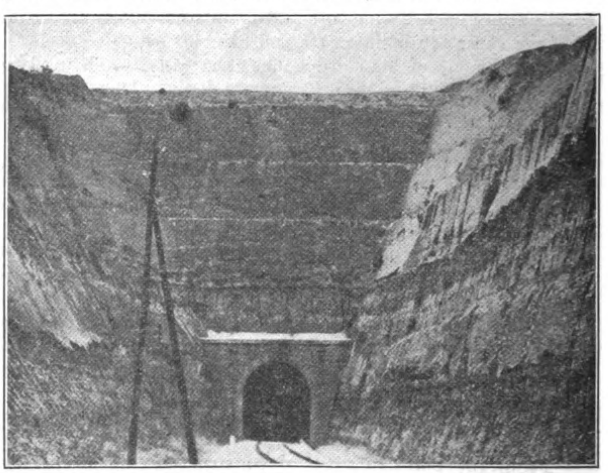
From the point of view of the scientist and of the tourist, the country traversed by the Lunghai railway is extremely interesting. Honan and Shensi Provinces are the cradle of China; from Hsuchowfu, which gave four Emperors to the country, to Sianfu, the line touches all cities which have been the capital of the Empire before Nanking and Peking. In the plains and in the mountains traversed, the fate of the country, and even of the Chinese race has been more than once decided. Along the eastern section, where there is no stone, very few of the monuments erected in bricks have been preserved, but west of Chengchow we find, at Kunghsien, the tombs of the Sung Dynasty and the caves of She Kou Sze with imposing statues of carved stone. Near Sungshan, which is called the "Mountain of the Centre," we can visit the cave in which Bodhidharma lived during nine years; also trees and pagodas dating from the Han period, and a series of monasteries, the most recent of which was built in the sixth century, one of them having been the Summer Palace of the Wei Emperors. Further west we meet a tomb of the Tang Dynasty with beautiful stone lions, and the ancient pagoda of the White Horse, where buddhism in China found its first refuge. There are numerous high tumuli containing the remains of men who were powerful and famous in these remote ages. Honanfu, itself badly preserved, still possesses the tomb of Kuanti and the celebrated caves of Lungmen, where giant statues hewn in the solid rock and thousands of smaller buddhas have been sitting in darkness and silence for centuries. Many "kutsi," or ancient monuments, are still waiting for identification by the archaeologist. No doubt they will come in growing numbers once the railway will insure more comfortable travelling, and when, next to the small Chinese inns, western hotels will provide better accommodation. In the meantime, the railway administration contemplates building rest-houses at suitable places.

During the war, construction work on the line was suspended. An issue of bonds to the amount of £6,000,000, which was to take place in Brussels and Paris in the autumn of 1914, could not go through. Many members of the staff were mobilized, and it was impossible to ship the supplies for which orders had already been placed in Belgium and France. From America, however, quite a lot of material was obtained, and the sections already built could be worked to advantage, as is shown by the figures of receipts given above.

The energetic Director of the Lunghai railway, Mr. Sze Sao-tseng, deserves great credit for having succeeded in raising about five million dollars in China, with a view to making good the stoppage of transfers from Europe.

Since peace has been signed, negotiations for an active resumption of construction work have been started and are said to be progressing favorably. An issue of about £8,000,000 of bonds is contemplated. This would bring the total amount issued to £12,000,000 which exceeds the nominal amount of the loan by £2,000,000. Yet, the cost of material and labor has so enormously increased and the price of silver has risen so high that it would not be surprising if about £30,000,000 altogether were required to complete the line. The high exchange rate is an adverse factor inasmuch as more gold is needed just at a time when the money supply available for investment in China is very limited; but as all receipts of the railway are *silver* receipts, the transfer of money at the present rate of exchange will only entail an actual loss for the Chinese Government in case the price of silver drops again, which is not certain. The question is: Can China suspend its development and thus waste millions of profit until the price of silver has reached a so-called normal and steady level? The situation, abnormal as it is in more than one respect, would certainly warrant the adoption of a systematic plan of development. The most profitable and most urgent undertakings should be taken in hand first, but so many divergent interests are involved in the work of westernizing China, so independent of each other are the financial groups who hold railway contracts, that concerted action is almost out of the question. The plan to form a new Consortium for Chinese business, may be looked upon as an attempt at co-operation and systematic effort, but it is feared by many that, although excellent in theory, it would be almost impossible in practice, on account of the difficulty of harmonizing the different foreign interests involved and of adopting the rational development of China as the guiding principle.

We understand that the financing of the Lunghai Railway is being considered quite independently of the new Consortium, although it is not impossible that the Lunghai Syndicate, which is a Belgo-French concern, will be reorganized on a new basis, more broadly international.



THE FORMATION OF THE LOESS IS HERE PLAINLY OBSERVABLE. IT PRESENTS A FACE LIKE PLASTER

Culled from the Customs Reports

The following notes on matters of interest in the various Treaty Ports are taken from the reports of the various Commissioners of Customs for the year 1918, now being issued by the Chinese Maritime Customs:—

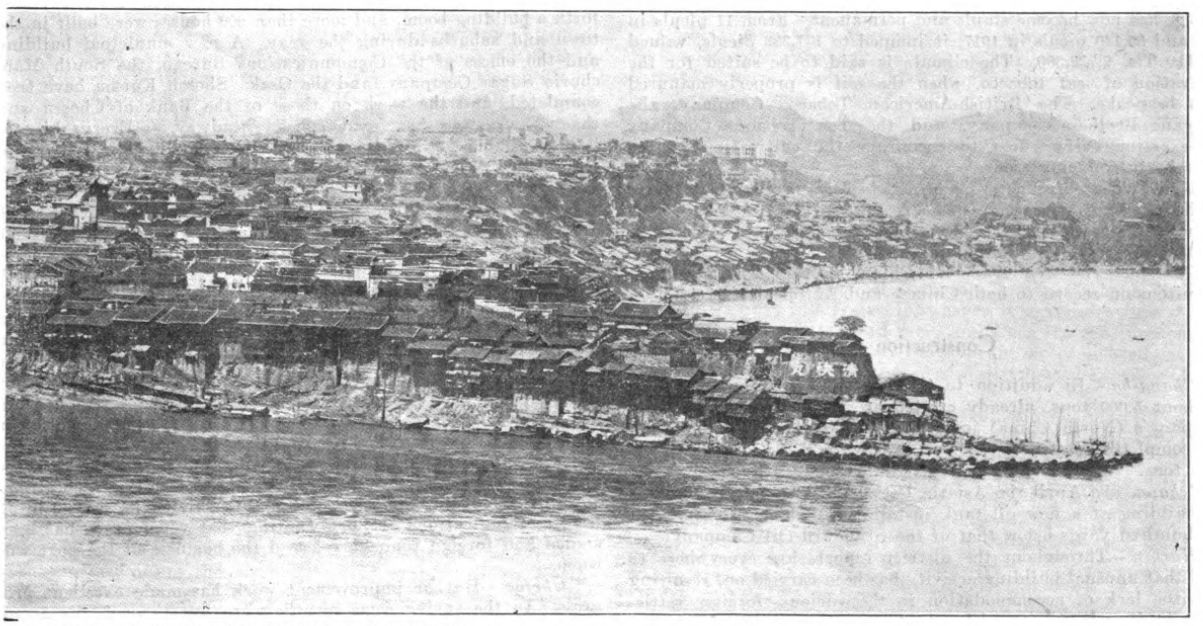
Agriculture and Afforestation

Nanking.—The excellent work of the Agricultural Department of the University of Nanking during 1918 deserves the serious attention of all who are interested in the trade and welfare of China, seeing that, as Professor Reisner remarks, "70 to 85 per cent. of China's population is rural—their interests are tied up in agriculture." Scientific teaching has been given, and experimental work has been carried on in sericulture, forestry, improvement of soils, farm crops, etc. The University already has the largest collection of different mulberry trees in China. Its forest nurseries contain specimens of 123 different species of native and foreign trees. It has carried out variety tests with about 50 varieties of wheat, 75 varieties of rice, 50 different kinds of cotton, etc. The staff has also translated into Chinese and published text-books on agriculture and kindred subjects. I believe that the agricultural population of this province would benefit very much were agricultural shows held at Nanking periodically, and facilities given to enable farmers to exhibit the best specimens of their crops and to visit the University and Government experimental farms for instruction and advice.

Kiukiang.—As evidencing the interest which is being taken in the improvement and development of the China tea trade in Kiukiang district, there are three institutions worthy of mention: firstly, the Anhwei Tea Planting Farm, an experimental and testing farm working under the auspices of the Ministry of Commerce and Agriculture; secondly, the Ningchow Tea Plantations, Ltd., the first Chinese estate adopting manufacture by machinery; and lastly, the China Model Tea Estate, Ltd., which is also using inproved methods in cultivation and manufacture.

Hunchun.—An afforestation bureau has been established for the control and protection of the national forests in the Hunchun and Wangching districts.

Wanhsien.—Wood oil had been famed for its purity and accepted without strict examination by local oil hongs as well as by foreign firms in Hankow, but since the rise in price in the spring of 1917 adulteration commenced and continued to grow from bad to worse until, in September of 1918, not a single basket of pure oil could be obtained on the market, and about 2,000 piculs of unsaleable oil had accumulated on the hands of the dealers, which could not be disposed of other than for local consumption at a heavy loss. In the Trade Report for 1917 it was stated that before delivery is taken by local oil export hongs wood oil is invariably examined by professional "examiners," who depend entirely on their experience of testing it by color, touch and odor. Since local merchants who had overstimated the reliability of this primitive method, suffered heavy losses as a result, through either the rejection of the entire shipment or its acceptance at a heavy discount by foreign firms in Hankow during the summer, a more scientific method of testing the oil has been adopted. The new method of testing was introduced by a Japanese firm in the spring, at considerable risk of incurring a boycott on account of its strictness. This precaution on the part of the local buyers, together with the fall in price and the strict steps taken by the Chamber of Commerce in imposing heavy fines on the sellers of adulterated oil, has produced a very salutary effect, and adulterated oil has gradually disappeared from the local market. It is earnestly hoped that a rise of price in future will not allure local and up-country dealers to adopt the shortsighted policy of adulteration, and that Wanhsien oil will soon regain and maintain its former good reputation on coast and foreign markets.



CENTRE OF SZECHUAN PROVINCE

the rapids below Chungking and tranship their cargo to river vessels of deeper draft at Ichang. One of the steamers on the Chungking run is shown in the illustration on page 716.

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With the enormous demand for antimony regulus during 1918 came the setting up of a considerable number of small and cheap native "plants" for smelting purposes. They consist merely of a coke-kiln fire which collects the fumes in clay-built chambers, draught being supplied by hand-driven fans through wooden ventilators. The production per furnace as compared with that of the steam power driven plants, with cast iron collecting chambers, is exceedingly small, but the competition of these native "plants" in production cannot be overlooked when it is realised that they cost next to nothing to erect and how cheaply they can be worked by coolie labor. Towards the end of 1918 only the richest of the antimony mines were able to work, and this at a loss, for the price of antimony declined rapidly with the advent of the termination of hostilities in Europe, when regulus was offering at Hankow Tls. 60 per ton. This represents one-twentieth the price of the metal easily obtainable in 1915, one-fifteenth that in 1916, and one-fifth that in 1917. Up to the signing of the armistice tungsten was disposed of at prices ranging from $1,000 to $1,300 per ton. It fell to $700 per ton with no buyers, and a source of taxation was closed to the rapacious military who levied additional dues on the mines and the ore. Lead fell from Hankow Tls. 11 to Tls. 7 on the appearance on the market of Australian lead.

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The Yu Fan Iron Mining Company completed a mountain railway—about 5 miles long—from their mines to the river bank at Tikiang, a small port 30 miles up river from Wuhu, and they commenced to ship ore in October.

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Mining

Changsha.—The shipments of coal and coke, output of the Pingsiang Colliery, show a decrease for 1918 of 238,829 and 120,647 tons respectively, below those of 1917. The military operations around Siangtan and Chuchow, the principal shipping points, and scarcity of labor chiefly at the colliery, are exclusively responsible for this falling off.

With the enormous demand for antimony regulus during 1918 came the setting up of a considerable number of small and cheap native "plants" for smelting purposes. They consist merely of a coke-kiln fire which collects the fumes in clay-built chambers, draught being supplied by hand-driven fans through wooden ventilators. The production per furnace as compared with that of the steam power driven plants, with cast iron collecting chambers, is exceedingly small, but the competition of these native "plants" in production cannot be overlooked when it is realised that they cost next to nothing to erect and how cheaply they can be worked by coolie labor. Towards the end of 1918 only the richest of the antimony mines were able to work, and this at a loss, for the price of antimony declined rapidly with the advent of the termination of hostilities in Europe, when regulus was offering at Hankow Tls. 60 per ton. This represents one-twentieth the price of the metal easily obtainable in 1915, one-fifteenth that in 1916, and one-fifth that in 1917. Up to the signing of the armistice tungsten was disposed of at prices ranging from $1,000 to $1,300 per ton. It fell to $700 per ton with no buyers, and a source of taxation was closed to the rapacious military who levied additional dues on the mines and the ore. Lead fell from Hankow Tls. 11 to Tls. 7 on the appearance on the market of Australian lead.

Wuhu.—The coal mine at Chihchowfu, a small town on the right bank of the river 90 miles above Wuhu, worked by native methods, which formerly produced 90 tons of coal a day, only produced 30 tons a day during the year, although the number of shafts was increased from five to 13.

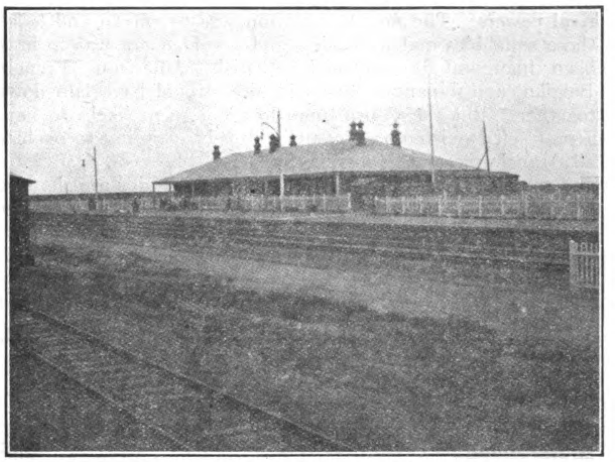
The Yu Fan Iron Mining Company completed a mountain railway—about 5 miles long—from their mines to the river bank at Tikiang, a small port 30 miles up river from Wuhu, and they commenced to ship ore in October.

Kiukiang.—The export of coal during 1918 totalled 5,235 tons. The production throughout the province is on the increase: there are 11 companies operating the various mines, of which the following, with their estimated monthly output, are among the principal: Loping, 2,500 tons; Poyang, 800 tons; Yukan, 1,500 tons; Tienho, 1,200 tons; Chian, 800 tons.

Opening China's Great North West

A Vast Region of Great Possibilities Tapped by the Peking-Suiyuan Railway

The great North West fascinated American minds for many years, and pluck, skill and energy have now conquered the difficulties that Nature had set in their way. The North West is now thriving and expanding just as fast as population



THE TATUNG RAILWAY STATION

will allow. This is due entirely to the railway, and to the foresight that saw that the railway would build trade, and the courage that sent the line into districts where there was no trade and no inhabitants. Where the line has gone trade has followed with lightning rapidity.

The undeveloped great North West exists in China Proper just as it existed in America, but there is a greater North West than even the tremendous territory embraced within the regions of China Proper. It extends over thousands of leagues through Inner Mongolia into Sinkiang (previously known as Chinese Turkestan), over territory believed by people who have not been there to be desert, but known by travellers to include vast areas of rich grass land, which, opened by railways, would carry a tremendous population, where now they are used by nomads for their flocks and herds. Year after year sees more and more Chinese farmers pushing further North and West with their cultivation, encouraged by the progress of the Peking-Suiyuan railway, and if that line could be continued through Inner Mongolia to tap the great plains in the vicinity of the Yellow River and beyond, hundreds of thousands of Chinese could be taken from the overcrowded provinces and settled on a land remarkable for its extraordinary fertility, and for its grazing possibilities.

In North Shansi, bordering on the undeveloped sections, there are large deposits of coal and iron, which will be of tremendous importance to the great settlements which will certainly develop in the future, and maybe the territory as yet unexplored and unprospected will yield all manner of other necessary minerals. Also there are large coal deposits much further West, in Kansu Province, which the natives have been working for years. So requirements in the matter of fuel for railways aiming to tap this region and penetrate through to Kashgar to link up with the Trans-Caspian system which now is in operation are abundant, as also are the prospects of freight when the land is occupied. Apart from its value to China a railway traversing this region and connecting with the European systems will be of enormous importance to international communication. It is consequently advisable that thought be given to the problem of opening the regions which demand development, as well as to the nearer problem of setting down in China Proper a well-planned co-ordinated system, and that China be financially assisted in the construction of these lines.

In the opening up of the great North West of China Proper there are fewer difficulties to contend with than were encountered by the pioneers in America. Instead of the vast empty plains that the railway engineers crossed in America, there are thriving villages and townships, with families of farmers, who have held their farms for a hundred years or more. Everyone is waiting for some means to transport their goods to large markets and to the sea. Now, only sufficient crops for their own consumption, or not too large to glut the market of the neighboring town, can be raised profitably, and imports naturally remain small, since the farmer has no means of increasing his purchasing power. Once a railway comes to move large quantities of grains cheaply, trade receives a tremendous impetus, both in imports and exports. There are no labor difficulties to be faced. There are men, and to spare, in Shansi, Shensi and Kansu, and no more hardy race of settlers, farmers or pioneers could be found than the stalwart descendants of the dwellers on these wind-swept highlands.

The Peking-Suiyuan Railway has shown this already, for, passing through districts from which it was expensive to move grain and oil-producing seeds down to their natural market of Tientsin, it has spread a steadily increasing prosperity all along its length, although the last two years have been difficult ones for exporters, on account of shipping

A VIEW OF TATUNG'S MAIN STREET

The main street of Tatung is a broad thoroughfare with wide pavements, and is tree-flanked. It is now in course of re-construction and by the spring of next year will be macadamized. When this photograph was taken, it was a common sight to see carts bogged in the middle of the road.

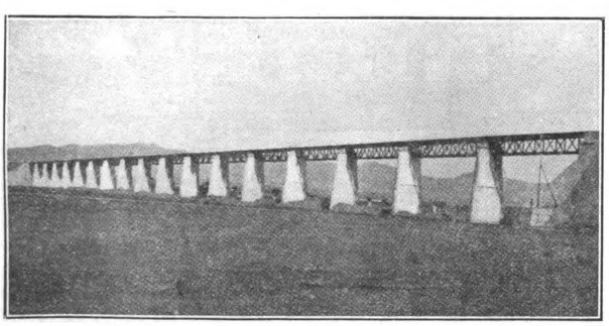
restrictions and the high silver exchange. Grain has increased from 143,902 metric tons in 1917 to 167,828 in 1918: linseed from 7,974 to 15,188: wool from 25,129 to 33,901. This year will probably see an even greater increase, although the fact that the Mexican dollar is now worth more than the United States gold dollar is a most serious drag on export business.

MODERN ROAD INTO TATUNG CITY

A new macadamized road is being built from the railway station at Tatung into the City. In order to connect with the main street in Tatung the various walls have to be pierced. This photograph shows three or four of the gates recently made.

Railways have been China's greatest need for the last twenty years, and so tremendous are her requirements that, however largely railway construction is undertaken in the next decade, there will still be much to do fifty years hence. Many thousands of miles will have to be built to meet the requirements of a continent holding three hundred and fifty million people—all born traders. There are, however, many difficulties in the path of anyone wishing to help China, to benefit trade, and to reap a handsome profit by building a railway. The first and greatest is an intense form of that international jealousy of which it is now the fashion to explain away by saying "secret diplomacy."

Few Powers have ever had a definite policy in regard to China, because, to formulate a definite policy, one of two alternatives must be faced—either her break-up must be



THE TATUNG BRIDGE

This bridge carries the railway across the Yuho at Tatung. It is 1,800 feet long, the spans being 100 feet each. The piers are of concrete on foundations thirteen feet below the river bed surmounting Oregon pine piles 18 to 25 feet in length. The bridge cost about $30,000 to build.

counted upon, when the policy must be calculated to give the maximum yield in the scramble for the pieces, or else China's continuance and growth as a great Power must be presupposed and more constructive help than copy book maxims, however liberally administered, supplied. So most powers have adopted Mr. Micawber's attitude and waited for something to turn up. In the meantime they have expended their energies in checkmating every scheme proposed by other Powers. This is especially true of the railways, and the study of the negotiations for the Tientsin-Pukow or some of the proposed American lines will give a deep insight into the petty obstruction which passes for diplomacy. Most of these squabbles have only caused a mild irritation in chanceries, accompanied by violent animosities among the commissionaires of the rival powers. The new Consortium was to put an end to all these squabbles and jealousies, and a golden era was to have been inaugurated, in which, British, American, French, Belgian, and Japanese concessionaires would have lain down together. But the Consortium does not seem likely to have a protracted existence. Japan is already claiming to exclude all Manchuria and Mongolia from its sphere of operations, and some of the members of other foreign groups are showing considerable resentment at what they consider an invasion of their preserves. China herself cannot build her own lines, first, because she does not happen to have the money, and, second, because there are international difficulties. Russian policy in China has much to be responsible for, and for

MUD IN KALGAN

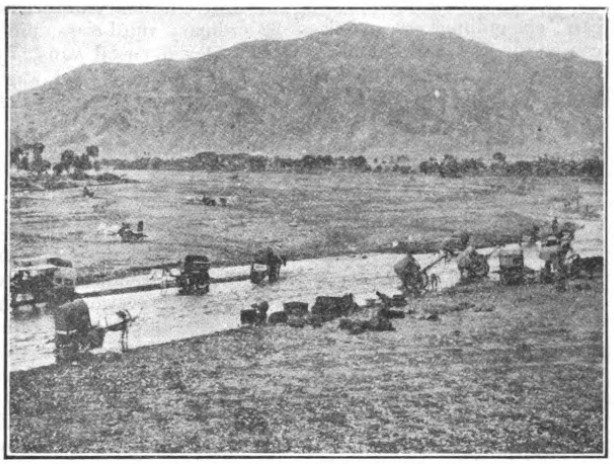
Carts are constantly being bogged in this street which becomes nothing but a quagmire of black mud when rain falls.

nothing more than developing the policy of penetration by concession and loan. Under these somewhat depressing conditions it is, therefore, an additional pleasure to find a railway—which was built with China's money by Chinese engineers and which has proved itself a great success from an engineer-standpoint—which is carrying on a most valuable work in its share of the development of the North West.

Where the line (the Peking-Suiyuan Railway) will go after its present terminus is reached is at present uncertain. There are many conflicting claims and difficulties in the way of pursuing the natural course, viewed from the financial standpoint, of carrying the line up to Urga on the north and through Ninghsia to Lanchowfu on the west. It is, however, in these directions that the line will go, and wherever it goes it will pass through rich country and benefit China by drawing off some of her surplus unemployed to regions where they can earn their living honestly on their own land.

The Peking-Suiyuan Railway

The FAR EASTERN REVIEW has from time to time recorded the progress of the Peking-Suiyuan Railway, but some of these references are buried in back numbers, which, since they are out of print, may not be accessible to many of our readers. Before therefore dealing with the line as it is to-day, we propose to recapitulate briefly its history, even though we are repeating information already in the possession of some of our readers.



A SCENE ON THE RIVERSIDE AT KALGAN

The Chinese carter is proud of his cart, the wheels of which are often highly varnished and in some cases inlaid. The scene here depicted of carters washing the mud off their vehicles is a common one in wet weather at Kalgan.

In 1905 Yuan Shih-k'ai memorialized the Throne on the subject of the construction of a railway from Fengtai, the railway centre just south of Peking, to Kalgan, at the entrance into the pass to Mongolia. The peculiar feature of his proposal was that though the line ran through some hilly and difficult country necessitating much embankment, bridging, and tunnelling work, only Chinese engineers and Chinese capital were to be employed.

The late Jeme Tien-yow assumed charge of the work later in the year, and in October, 1909, a service was opened to the public. The line runs through the Nankao pass, tunnelling under the great wall at the summit. The rise from Nankao to this point is 1,600-ft., and the worst gradient 1 in 33. Much embankment work and three tunnels had to be made, and this part of the line was highly praised by all the foreign experts who passed along it. From the pass the line runs down across the Huailai plain up to Kalgan in the hills, climbing steadily to 2,460-ft. above sea level. This was the terminus originally decided upon but while the line was still building it was decided to continue it. Instead of going northwards towards Urga and the Trans-Siberian Railway system, it was, on account of physical difficulties and for reasons which have in some cases ceased to exist, thought better to turn west and south and tap the vast occupied regions in north Shansi Province which have no modern means of communicating with the world. The line was accordingly directed towards Tatung, and thence to Fengchen. This section was opened to the public in September, 1915.

The distance from Peking to Kalgan is 367 *li* (the *li* being taken as one-third of an English mile), and from Kalgan to Fengchen 414 *li*. The cost from Peking to Kalgan was Tls. 7,085,000, and from there to Fengchen $12,306,000. These two lines were consolidated into one in January, 1916. The capital for construction was supplied by the profits from the Peking-Mukden Railway. Since its beginning the line has been a financial success and the Report for 1918 shows that this increases year by year. The following is a comparative statement of the working results of the railway :

	1917	1918
Operating Revenues	$3,718,001.68	$4,400,638.58
Operating Expenses	$2,548,202.39	$2,866,190.12
Net Revenues	$1,169,799.29	$1,534,448.46
Ratio of expenses to revenue...	68.54%	65.13%

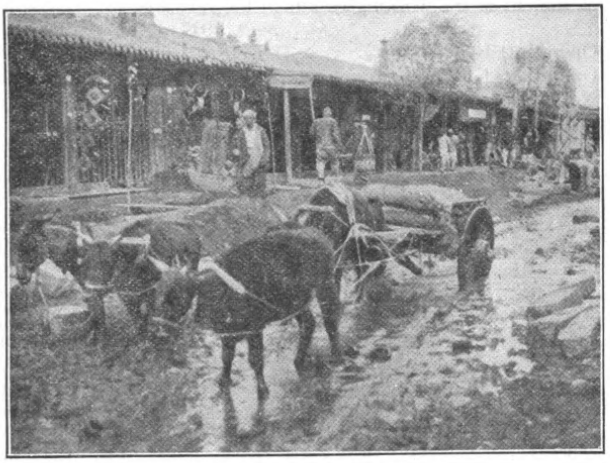
Extension Work Still Proceeding

From Fengchen the line is now being extended north to Pingtichuan, under Chief Engineer Chai Chao-lin, and will be continued to Suiyuan as fast as funds become available. In order to avoid some hilly country a northern route instead of one north-west, which is the shortest route, is being adopted. The distances are, from Fengchen straight to Suiyuan about 90 miles through country which would entail some 1 in 30 grades, while, as the road is planned, it will be some forty miles to Pingtichuan and then about 90 miles on to Suiyuan. The survey of this extension was begun in December, 1918, and work was started in April. It is hoped to have the line open to traffic in February, 1920. At present about 20 miles of earthwork and cuttings have been completed. The first twenty miles follow the valley of the Yu-ho, after which it strikes off across country. Rails are being laid at the rate of a third of a mile a day, and early in October extended some six miles from Fengchen. The maximum grade on the line will be 1 in 130 and the minimum curve radius 1,300-ft. Much embankment work had to be done, the average height being 20-25-ft., and the highest about 65-ft. Waterways make up 2½ per cent. of the total length, but only one large bridge will be required, of 100-ft. which will be covered in 20-ft. spans, and a concrete arch is building in seven spans of forty feet each. The cost per mile is $81,000. This is due principally to the high cost of materials. For example, sleepers which in 1913-4 cost $1.30-$1.70 now cost about $3.20 each. The construction work is done by contract, with the exception of

A MONEY CHANGER AT TATUNG

In streets of up-country cities, towns and villages, the money-changer is a common sight—and a necessity. The chief medium of exchange is the brass cash which is carried about in clusters, a string being passed through the hole in the centre of the coin. The money-changer in the illustration has his cash done up in strings ready for the customer to carry away. A cash is worth variously from 1,500 to 1,900 to a Mexican dollar in North Shansi. A donkey would be needed to carry $5 worth.

the bridgework. Coolies' wages in this region are about twenty Mexican cents a day, head gangers get thirty-three cents, bricklayers and carpenters thirty cents.



A MUDDY STREET IN TATUNG

Carts in this region are the usual wooden-axled, narrow-tired type which cut roads to pieces. They are drawn by all manner of teams, invariably three animals abreast in the traces. In this picture a bullock is in the shafts, with two others and a donkey in the traces. A team of flash Shansi mules or horses is sometimes a sight worth seeing, when at full gallop. When nearing cities all drivers of horses or mules in this country drive at top speed.

There are four branch lines in operation now. The first of these is the Peking-Mentoukou, which links up the coal mines with the Capital, being carried over the Yungtingho by a fine bridge. Construction was begun in 1907 and finished in 1908. The length of the line is 41 *li*, and the cost was Tls. 561,000. The country is very picturesque along this little line as the plain is soon left and the line runs among the western hills. Mentoukou itself is not more beautiful than most mining villages, but all around are pleasant walks. Two of the most ancient temples in North China are best reached from this line, Tan-cho Ssu and Tien-tai Ssu.

Another branch runs around the city, with the exception of the distance between the Shun-chih Men, or western gate of the southern wall, and the Hsi-chi Men or northern gate on the western wall. This line connects with the Peking-Mukden Railway at the Tungpienmen, and was begun and finished in 1915 at a cost of $509,000 for 27 *li*. Most people will regret that it was necessary to cut into the fine old Ming walls at the corners, and to demolish the enceintes between the inner and outer gates. The line so far is not much used.

The Tatung-Kouchuan branch was built to get to the collieries which are scattered through the Huai-yen district. It does not actually penetrate the hilly country where the mines are, but runs to the foot of the hills. The coal is brought down from the mines, some 15 miles away, to this railhead by camels and mules, and then loaded onto the cars. The importance of minerals to the main line can be estimated from the fact that coal represents 32 per cent. of the goods carried, and when the Lungyen iron mines are in full swing the iron ore will rival the coal in quantity. The cost of this branch was $1,200,000.

The Hsuanhua branch links up the railway from Hsuanhua to the Lungyen iron mines, some twenty *li* distant. The first fourteen miles were laid by the railway, standard guage, and the remaining seven *li*, which lie among the hills, the Iron Mining Co. laid themselves with light rails. This line began to work in January, 1919, but the Lungyen Iron Mining Co. has not yet begun operations on the scale which is planned. The cost to the railway was $170,000.

The rolling stock of the railway is in excellent condition. There are altogether 70 locomotives on the line, of which 14 are of the Mikado type. There are seven Pacific locomotives and six Shay, as well as a full complement of shunting and mixed types. These haul the trains successfully over the steep gradients, and provide a regular and punctual service. There are two saloon cars, four dining cars, three ordinary first-class cars, six ordinary second-class, 32 ordinary third-class, nine composite first and second-class cars, seven postal vans, 73 covered waggons, 149 ballast waggons, 490 high sided waggons, 48 coal waggons, and numerous other waggons of various types.

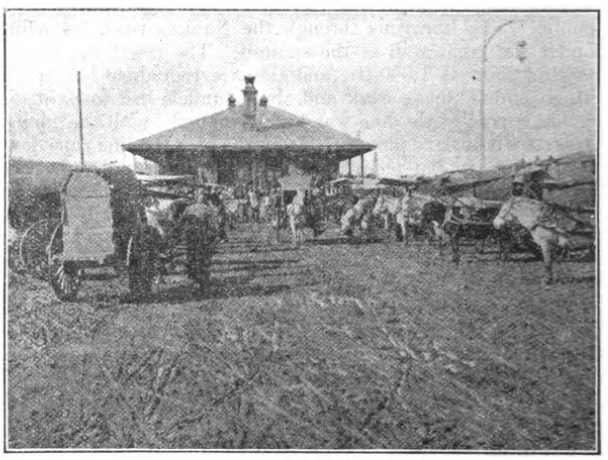
The stations are well built and cared for, and the appointments of the line generally are of a high class.

Through Historic Country

The country traversed by the line near Peking is rich in cultivation and pleasantly dotted with thick clumps of dark green trees, which mark the sites of the graveyards which abound here. To the west the hills rise abruptly from the plain, their southern spurs crowned by the buildings of the Summer Palace and various pagodas. A little further north are some picturesque ruins perched on the skyline. The soil gradually becomes less productive as the road runs north, and there are stretches of gravelly waste. Near Nankao many acres of land cannot be cultivated owing to the boulders and rocky detritus which cumbers the soil. Nankao is now a thriving little railway town, where locomotives are changed for the climb up the pass.

The ride up the pass is, of course, one of the finest sights in North China. The train winds through the ruins of old fortifications which were the most southerly defences of the past, the forlorn hope against Tartar raiders trying to get into the Chihli plain with its booty of rich villages, and, for large armies, the supreme prizes of the Capital and Empire. Beacon towers crown many of the hills, and from this point on the traveller is constantly reminded that he is passing over one of the world's great battlegrounds. Everywhere are crumbling walls, often mistaken as part of the Great Wall, and ruined defensive works.

The railway runs up the east side of the pass: in the middle a little stream shimmers among its rocks: and on the



CHINESE PASSENGER CARTS AT TATUNG

This picture shows a Chinese cab-stand at a railway station. All trains are met by these carts at Tatung and passengers going to the City ride in these or walk

west side is the rock-strewn road down which used to come the trade of the great North West on camels, and mules, and ponies. That trade is now diverted to the railway and the road is deserted save for an occasional drove of ponies in charge of Mongol horse dealers, strings of camels, or donkeys laden with fodder which look like haystacks mounted on thin legs.

GOING TO MARKET UNDER DIFFICULTIES

Hardships confront the Chinese producers in every phase of their fight for life. Carting produce to market along the great highway in Shensi Provnice is full of trials. Some idea of the road can be gleaned from this picture.

The pass steepens as it becomes narrower, and a series of wonderful military positions are passed which make one wonder how it was ever possible to take the Pass if there were but a handful of resolute troops to hold it. The little villages are decaying, but are prettily placed along the edge of the road, with their stone walls, projecting gables, and alas! rapidly decaying temples. In one place half a temple roof has fallen, and the god sits in the morning sun brandishing a sword which looks of doubtful efficacy against rain, the worst enemy to a mud god with wood bones.

Half-way up the pass is a famous gate, a picture of which formed the cover to the August FAR EASTERN REVIEW, and which is photographed religiously by all tourists ascending the road on foot or donkey. It is beautifully carved in low relief with religious subjects from Buddhist sources, and bears inscriptions in several Oriental languages. All these little villages were carefully fortified, with crenellated walls with miniature gate towers and bastions.

The Great Wall in its Glory

Near the crest of the pass the country is beautiful: the sides of the hills are covered with wild flowers, while the road winds through steep mountains which are broken into the fantastic shapes beloved by Chinese artists, and here and there glimpses can be caught of the Great Wall, stern in its grandeur, making its sinuous way among the upper solitudes like a huge ophidian.

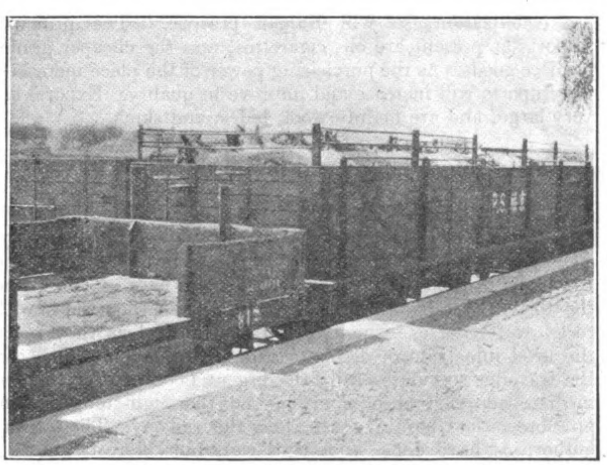
Just at the other side of the tunnel which burrows under the wall is the ancient village of Chatao. This was once of importance, and was a resting place for caravans proceeding down the pass. The village is enclosed within beautifully battlemented walls, with heavy gates, and there is a general air of resistance about it. Inside the walls now there is silence —the trade has gone for ever, and only a few of the poor still live by cultivating their scanty crops on the neighboring slopes or keeping a few goatish-looking sheep.

The hills themselves are bare of trees, and so the land at the foot of the slopes is unfit for cultivation as the soil is washed away by the rains which pour upon it. Within a few miles, however, the land improves and good crops of millet are raised. Huailai is now the centre of an apple producing district, but the apples are of the Chinese woolly kind. Huailai was once of some strategic importance, and was carefully fortified. The walls, which are crowned with towers and pavilions, enclose a good deal of grass land now, and there is little prospect of Huailai ever becoming as busy as it was in its garrison days.

The crops get better and better as Hsuanhua is neared, millet alternating with the various oil-producing seeds for which the district is famous. To the south and west a river can be seen, narrow and shallow in its broad sandy channel, and beyond it are the hills. Hsuanhua has a great past as a "fu" city, and as a pleasant retreat for retired Chinese officials. This Chinese Cheltenham is really pleasant to walk in for trees grow on either side of the streets and spread the shade of a century of growth, and in the main street running North and South there is a stream of clear water hurrying down a carefully raised canal. There is a drum tower, and a bell tower, in the best Chinese manner: there are miles of fine walls: and there are the remains of several fine temples. Sleepiness hangs over the whole city. Hsuanhua may have a future as the centre of a grain growing district, and as the junction of the line to the Lungyen iron mines close by.

The Frontier Town of Kalgan

A short run through fine scenery takes one to Kalgan. Everywhere there are good crops and an air of prosperity. Kalgan itself is flourishing in its dirt and mud. All around are the hills: due north through the pass is Mongolia: by the side of the little river is the old city with its filthy little lanes and dirty little shops, and from it there stretches a road to the Governor's residence and the pass. The roads in Kalgan are of two kinds, and in wet weather may be classified as lakes with muddy bottoms and lakes with stone bottoms. A few intrepid ricshaw coolies ply in the streets, but the only satisfactory conveyance is a cart. No one riding in a cart think satisfactory the word for it, but if one gets out one sees that the improbable is true in this case. A cart keeps one's feet dry and moves from place to place. That is all it does for one, and it does a great deal against one. It bumps, it

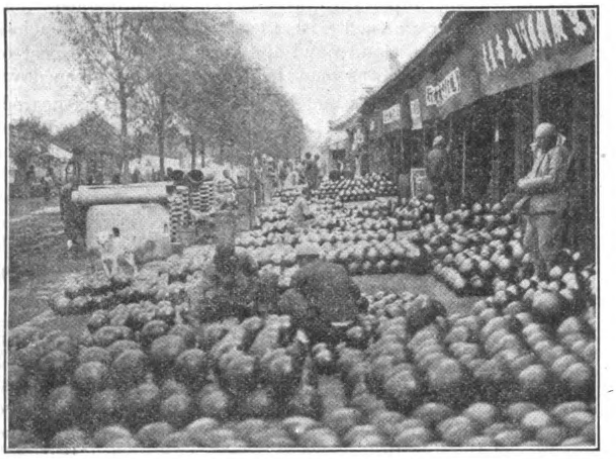


OPEN TRUCKS ON THE PEKING-SUIYUAN RAILWAY

Large numbers of horses are brought down to Peking from Kalgan by the Peking-Suiyuan Railway. These horses are from the Mongolian tableland

bangs, it jars : it is so designed that the only possible way to sit in it in comfort is outside, on the shafts, swapping fleas with the driver in the rain. But it gets there.

Kalgan has electric light, a telephone system, and would have a great future as a summer resort in the hills could it



THESE ARE NOT CANNON BALLS

The streets of Tatung presented a unique appearance during the first week in October. The foot paths were literally filled with melons; so were the shops, houses and even temples. The crop was so good that the harvest could not be disposed of. An interesting feature was that snow was falling on the mountain ranges and sleet was falling in the city when this photograph was snapped. By the middle of October naturally iced melon should be common in Tatung.

be developed on modern lines. All the trade from the western part of Mongolia comes here and transfers from camel caravans to railway trains. Mongols abound in the streets, and Chinese shopkeepers, and manufacturers of all manner of metal ware of a crude kind, drive a profitable trade by supplying them with their simple needs. At present the main seat of business is on the long road stretching from the old city towards the pass, where many shops in the most horrible blend of foreign and native architecture have been built, and where street stalls abound in their hundreds. A colony of godowns and sidings is growing up around the railway station.

As Mongolia is developed by the steady progress of Chinese colonization, so will Kalgan prosper. The principal imports at present are oil, cigarettes, and the cheaper grades of piece goods. As the purchasing power of the place increases, the imports will increase and improve in quality. Exports are very large, and are mainly wool, hides, and skins.

Stern Hills and Prosperous Valleys

The road runs south-west from Kalgan towards Tatung through wide valleys and in some cases fine rolling country. The hills, snow-capped early in October, are to the north and the plain to the south. The hillsides are bare of trees, and the torrential rains of summer have scarred their sides with rocky watercourses, which spread out fanwise as they reach the level into belts of desolate land. Nowhere in China can the traveller see more easily the urgent necessity for the immediate adoption of a scientific and thorough-going system of afforestation than by a trip along this railway. The railway authorities have done what they can, but afforestation is a matter for the Central Government. Originally willows were planted along the line, but these were useless for timber purposes and are being replaced by elms and broad-leaved poplars and firs. The country is dotted with little villages, each being enclosed in a rectangular wall. Some of these walls cannot be longer than 150-ft. and show vividly how this region has suffered from perpetual warfare and raids from the north, if the small husbandmen were forced to group together and undertake communal enterprises of these dimensions in relation to their scanty funds. The larger cities are all equally well protected, and there are several systems of beacon towers which carried warnings across the country. At present the towers are falling slowly into dust, and raids are done by loan and treaty. Running along the base of the hills in this region is a fine wall, with towers every few hundred yards. This was built many years ago by an Emperor of the Yuan Dynasty who wanted to mark the boundary between Shansi and Mongolia—helping the latter as much as possible. Later the balance of power altered, and some miles north there is correction of the Mongolian survey—with Chinese errors this time.

The country is loess covered, and the action of water on this rich, soft soil is striking. The floods pouring down from the hills canyons in the loess on an average thirty or forty feet deep, which widen as they advance into the plain. These wind and twist in every direction, and must constitute formidable barriers to communication. In some places the villages are cut out of the face of the loess and there the dwellers revert to the condition of troglodytes.

An Ancient Home of Emperors

Tatung, once the Western Capital in the Liao and Chin Dynasties (AD. 1020-1234) is a fine old Chinese city of the classic type, some 3,450-ft. above sea-level. It stands just north of the Yu-ho, and there are no less than four sets of walls. The main city wall was rebuilt in the Ming dynasty, as was the wall of the Small North City, while the Small East and Small South Cities were then built for the first time. It was the seat of a military official of high rank.

We are now in Shansi, the best run province in the Republic, and the main street at all events is being metalled—not a day too soon. The accompanying illustrations show the quagmires which the natives thought were streets before. There are still traces of Imperial splendour about Tatung : the remnants of the gate towers, rapidly falling to pieces, are unusually large and fine : there are imposing memorial archways in the streets, and the temples are roomy if decayed.

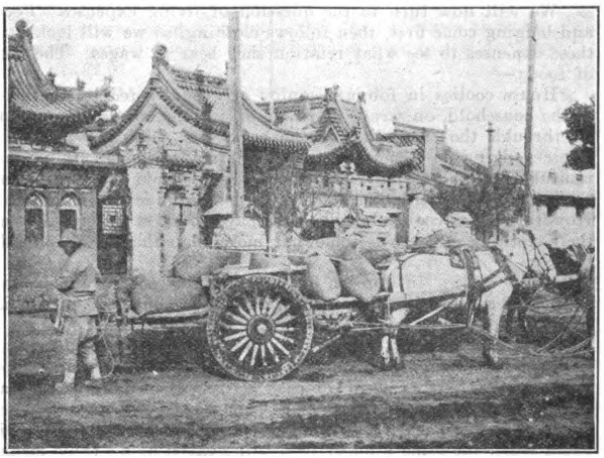
Some foreign goods find their way there, the inevitable cigarettes, oil, and candles chief among them. Animals—mules, horses and donkeys—abound, for Shansi is a great livestock province.

One of the chief sights of Tatung is the Nine Dragon Wall, which dates from the Ming dynasty. It stood outside what was Tai Wang's Palace, and is still in good preservation. It is thirty feet high and 600 long, has nine dragons in encrusta tiles on it. These dragons are much admired by the Chinese for the vigour of their modelling, and the boldness of the colour scheme. In times of drought the country people assemble here and burn incense before these representatives of the Heavenly Powers. Another sight of Tatung is the Hua Yen Temple, which was built by the Emperor Ch'ing Ning who ruled 1055-1066. This contains some interesting bronzes and buddhas, as well as some fine wall paintings. The priests keep the temple in good order. The Emperor Hun Wu of the Ming dynasty converted it into a granary, but it later reverted to its original sacred purpose.

The Yuho runs down the west side of the city, and near it five bronze bulls were erected centuries ago to prevent floods. Four have been washed ignominiously away, but the fifth remains triumphant in the loss of only half a horn in his tussle with time and tide.

A great deal of grain finds its way south from here, as well as live stock and coal, the latter costing only $3 a ton delivered in Tatung.

The Shansi men are proverbial in China for their business aptitude, and enjoy a similar reputation to that of the Scotch. They formerly supplied the empire with its bankers, and now some trades are largely in their hands. To be thrifty among the Chinese is thrift indeed, and their passion for saving



A SCENE IN KALGAN

The style of architecture at Kalgan, as well as the type of cart and method of harnessing is here clearly shown. It will be noticed that the long rope traces are passed through rings attached to the ends of the short shafts.

is illustrated by the adventure of a Shansi man in the Buddhist Hell. He was unhesitatingly condemned by his judge to be boiled in oil, in a large iron pot which was hung over a fire near by. After glancing at it he said "Why boil? Wouldn't bake do? Justice will be served, for it will be just as inconvenient for me, and"—insinuatingly—"couldn't we come to some little arrangement about the oil we'd save?" Certainly life is hard on these wind-swept highlands, and centuries of fire and sword make a self-reliant and determined race.

From Tatung the railway continues up the valley of the Yuho, 27 miles, to Fengchen—the attitude of which is 3,449-ft. above sea-level—the grade from Tatung being one in two hundred, with a minimum curve radius of 1,100-ft. As the railway threads itself among beetling hills it passes remnants of the old Shansi boundary wall, which dodges through valleys and over hills but still defies the ravages of time. Old garrison towns whose walls are banked to the top by wind blown sand and whose glory has long departed still recall the invasions of the Mongols and the military activity which once made the hills resound. The cities now shelter farmers whose families for a hundred years or so have cultivated the valleys, who found it almost impossible to reach markets and who grew merely sufficient to sustain themselves and to trade for barest necessities. The railway has opened a new trade vista for these people, and since its opening to Fengchen their conditions have improved a thousandfold. Markets can now be reached and commodities are grown which the buyers in distant places demand.

Fengchen is an old town which has long served Inner Mongolia and which is now a centre of a considerable trade from Kweihwacheng and towns near the Yellow River and in Kansu Province, carts continually arriving with hides and wool and liquorice and other products for shipment to Tientsin and thence abroad. From Fengchen, as mentioned, the line is being pushed forward, and continues up the Yuho valley to Hunsobah—20 miles north of Fengchen—when it strikes through the hills across more open country. Provided funds are made available it will reach Suiyuan, the trading mart of Kweihwacheng, in the near future, and will alter the conditions of the whole of this fertile country. General W. S. Y. Tinge, the Managing-Director of the Railway, is doing his utmost to push the line through to Suiyuan—and beyond. If his ideas materialise China will have a line which will open up her great North West and which will eventually give direct connection with the existing Trans-Caspian system of railways.

China and Wireless

The Chinese Government gives evidence of serious intentions regarding the control and operation of wireless. A Radio Section has been established at the Ministry of Communications, Peking, which will have charge, under the Director-General of Telegraphs, of all wireless affairs. Major Dockray has been appointed Supervising Engineer, and he will be assisted by a staff specially selected.

The primary work of the Radio Section will be to reorganize matters connected with the wireless interests already acquired by China and to erect and operate the three new Marconi stations recently contracted for and the plant for which is now in China. Major Dockray comes to China from the Marconi Company, London, and during the War was a member of the British Aviation Corps. He will personally supervise the erection and installation of the new plants to be situated in Urga (Mongolia), and Urumchi and Kashgar (Sinkiang). The material for the Urga installation is now at Kalgan, *en route* for its destination, and the two other plants will go viâ Fengchen. All the material will be taken on camels and carts from the railway at Kalgan and Fengchen.

The equipment is for the erection of the latest type Marconi arc stations, and comprises the latest Marconi receivers, similar to those which have been utilized by the British Admirality during the War, and special aerials for directional working, so that communication can be maintained during atmospheric disturbances.

A Chinese technical staff to operate the stations is now being prepared, instruction being given to a number of Chinese in Peking, while Chinese engineers are now being trained at the Marconi factory in London.

The wireless telephones ordered by the Chinese Government from the Marconi Company of London some time ago are now in China, and will shortly be handed over to the Board of War. A demonstration will first be given to the military officials at Peking.

Details of the recent contract secured by Vickers, Limited, for the construction of aeroplanes and aerodomes in China have not yet been made public. The contract was arranged by Mr. F. W. Allonby, who unfortunately died a few days afterwards owing to complications arising from an attack of typhoid. A short time after the contract was signed a loan for £1,803,200, bearing interest at 8 per cent. and discounted at 98, was placed on the London market and fully subscribed.

Engineering, Financial, Commercial, and Industrial News

RAILWAYS

Light Railway in Korea.—The "Seoul Press" reports that by the promotion of Mr. S. Sakagami, and some other representative citizens of Kunsan, official permission has been granted a company to run a light railway between a point opposite Kunsan and Ansong, 98 miles in length. The railway is chiefly to transport goods in those localities.

Wider Railway Cars in Japan.—As one measure for increasing the capacity of railway cars to meet the continual rise in traffic, the Japanese Imperial Railway Board is building passenger cars nine feet two inches in width, which is eight inches wider than those now in service. When a sufficient number have been built, they will be tried out on the Tokaido line.

The Canton-Shiuchow Line.—An express train is now running between Shiuchow and Canton and makes the journey in about six hours. Formerly there was only one train each way daily, and it took nine hours to cover the distance.

A Switchback Railway in Kyushu.—The "Nagasaki Press" reports that an application has been made to the authorities by capitalists in Nagasaki and Moji, Japan, for permission to lay down a switchback railway between Nagasaki and Mogi. The capital is to be half-a-million yen, and it is intended to carry passengers and general goods. Over ten cars will be employed in the service.

A Railway to Rokkosan.—The Hanshin Kyuko Company, which is building a line between Kobe and Osaka for running express electric cars, has under consideration a project for laying a cable-car line from the village of Rokko (near Kobe) to the summit of the mountain, a distance of 3½ miles, to give facilities for reaching Rokkosan, says the "Japan Chronicle."

Messrs. Takei and Tsubota, of Kobe, have two proposals, one for a line to Rokkosan and one for a line to Arima, the latter being merely an extension of the former. The estimated cost of the Rokkosan line would be Y.170,000 and of the whole line as far as Arima Y.277,000. The distance to Rokkosan is put at 5m. 30c. and to Arima at 8m. 4c.

S. M. R. to Expand Enterprises.—The Japanese intend to reorganize the South Manchurian Railway and the capital is to be increased in order to develop enterprises in the three eastern provinces. These include mining and forestry rights and the building of four new railways. The Railway Co.'s estimates for 1919, recently passed by the Japanese Government, contain an item of over Y.2,000,000 for enterprises on the main line.

Progress of Malay States Railways.—The expenditure of large sums to cover railway extensions, the purchase of new rolling stock, the erection of railway stations and the construction of new bridges is being planned by the Government of the Federated Malay States. Fourteen locomotives have been ordered from the United States. In 1918 a through train service with Siam was inaugurated but, owing to the shortage of engines and rolling stock on both Siamese and F. M. S. lines, the development of through traffic between the two countries is somewhat slow. Considerable progress is being made with the East Coast Railway which will ultimately link up the Eastern States with Siam. There is a great demand for steel for construction purposes, especially in connection with the erection of new railway bridges. An increased demand also prevails for motor transport; large quantities of motors have, during the past few years, been imported from the United States.

Projected Railways in Korea.—The Oriental Development Company and some other Japanese capitalists have applied for permission to establish a railway company to build railways to develop West Korea. Another company named the Kokusen Tetsudo Kaisha (North Korea Railway Company) has applied for permission to organize to build railways in North Korea. It is reported they propose first to connect Lajin, a port in North Hamkyong Province, with Hunkei, viâ Ungkeui, Kyongheung, and Keumdong, about 83 miles. A second part will start at Old Kanwon, and reach Hoilyong on the Chongjin-Hoilyong Railway, a branch connecting with the Tienpaochan Light Railway viâ Onsong and Chongsong. A survey of the route has already been made by Mr. Asoh, a mining magnate in Korea, so that it is hoped that the plan will be realized at no distant date.

Dutch East Indies to Build 10,000 Miles.—The Colonial Government of the Dutch East Indies proposes to build 10,000 miles of railways during the next 15 or 20 years.

Far Eastern Railways and Markets.—There will inevitably be a great future expansion of the Chinese system of railway communications. Recent reports by American investigators in the East have repeatedly emphasized the desirability of increasing China's railway mileage. American manufacturers of railway materials and equipment may reasonably expect to share largely in supplying the needs of the present Chinese railways and those whose construction is contemplated. There has just been published by the Bureau of Foreign and Domestic Commerce a comprehensive book, with 339 pages and 46 illustrations, entitled: "Far Eastern Markets for Railway Materials, Equipment, and Supplies." The author is Trade Commissioner Frank Rhea, who recently conducted an investigation of this subject in China, Japan, Korea, and the Philippine Islands. As regards railway equipment in Japan, Mr. Rhea believes that, in the future, the Japanese are likely to be competitors of the United States rather than customers. The State-aided Japanese manufacturers will be further assisted in their efforts by their cheap supply of labor and cheap sources of materials.

China has at present about 6,657 miles of railway, of which 3,905 miles represent Chinese Government railways, 234 miles private railways, 112 miles provincial railways, 50 miles industrial railways, and 2,356 miles foreign railways that have been built with foreign capital aad are now subject to foreign control and operation. The Government railways are under the Ministry of Communications. The ministry has made considerable progress in what may be termed regulatory requirements, such as those making uniform the railway accounts, the operating organization, and, to a certain extent the operating methods. There has been some progress toward through handling of traffic and interchange of equipment, but very little actual progress has been made in consolidating these lines under one central administration so that they can be developed and operated as a whole to the best advantage —in which arrangement there would be a number of very real possibilities of obtaining improvement in the efficiency of both facilities and management. Trade Commissioner Rhea is an advocate of the unification of the Chinese Government railways, regarding this as the best solution of a difficult situation.

Receipts from Japanese Government Railways.—It is gazetted that receipts from Government railways during August amounted to Yen 24,284,959, Yen 14,155,500 from passengers and Yen 10,129,468 from freights. These figures represent an increase of Yen 2,726,663 in receipts from passengers, and of Yen 1,966,434 in that from freights, as against the same month last year. The average income per mile per day amounted to Yen 128.28, an increase of Yen 23.34.

Shanghai Tramways.—The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for the month of September, 1919, and for 9 months ended September 30, 1919, with figures for the corresponding periods last year:—

	September, 1919 Mex. $	September, 1918 Mex. $
Gross Receipts	186,210.75	156,872.48
Loss by currency depreciation	47,364.88	36,658.79
Effective Receipts	$138,845.87	$120,213.69
Percentage of loss by currency depreciation	26.66	24.53
Car Miles run	395,785	347,940
Passengers Carried	8,564,820	7,254,206

	9 months ended 30th September, 1919 Mex. $	9 months ended 30th September, 1918 Mex. $
Gross Receipts	1,513,265.21	1,258,313.99
Loss by currency depreciation	375,661.66	283,323.77
Effective Receipts	$1,137,603.55	$974,990.22
Percentage of loss by currency depreciation	26.05	23.79
Car Miles run	3,355,940	3,062,999
Passengers Carried	68,953,402	57,495,057

SHIPPING

Whampoa Dock Launches Big Vessel.—The Hongkong and Whampoa Dock Co., Hongkong, launched in October the s.s. *War Trooper*, a vessel of 8,000 tons deadweight with 11 knots speed. She is the third standard vessel launched by the dockyard within recent months, the other two being the *War Drummer* and *War Bomber*.

DECEMBER, 1919 VOL. XV. No. 12

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THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

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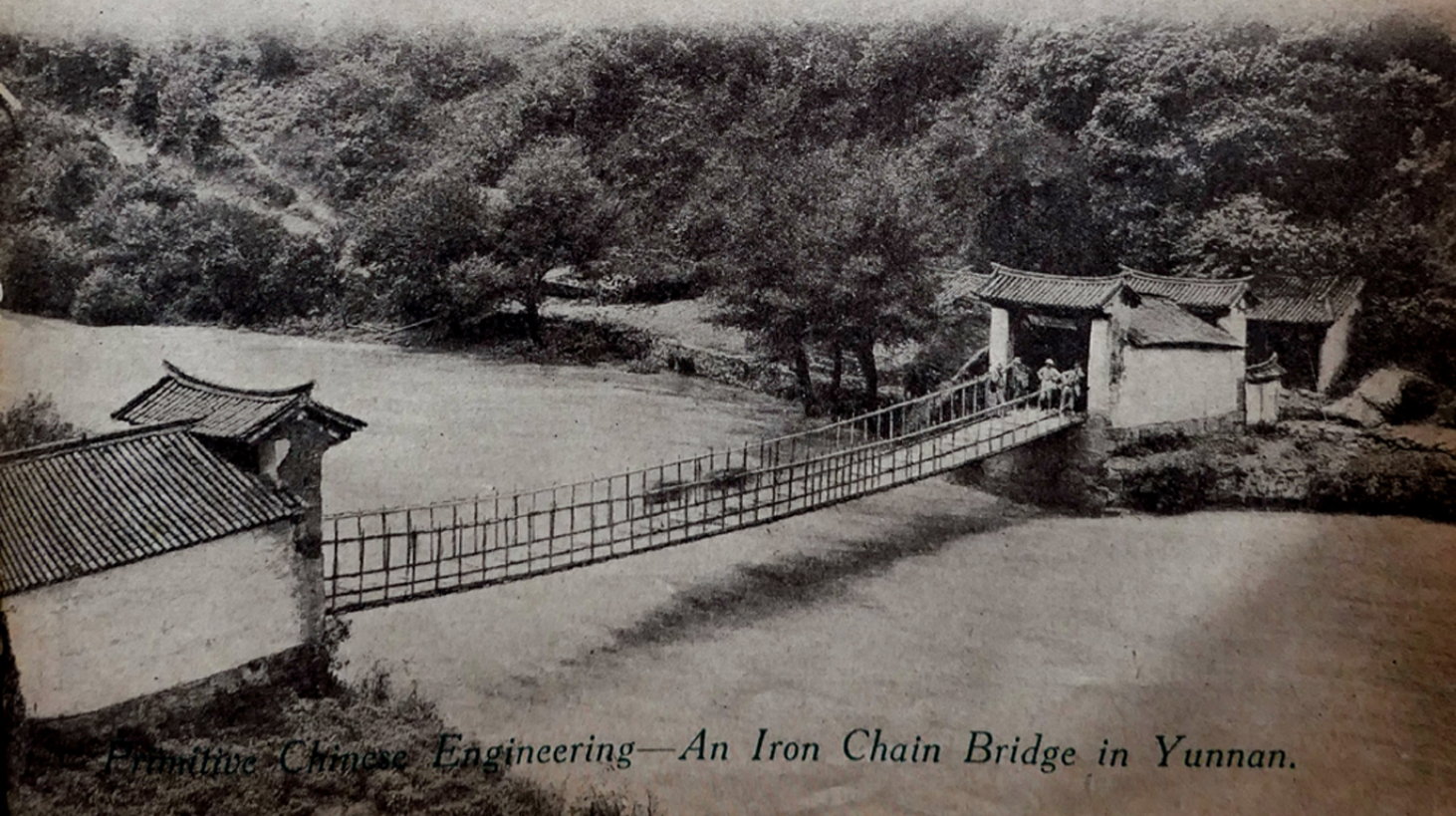


Primitive Chinese Engineering—An Iron Chain Bridge in Yunnan.

The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XV SHANGHAI, DECEMBER, 1919 No. 12

An Engineer's Journey Across Yunnan

Extension of the Burma Railway and Construction of other Lines and Highways a Necessity

By EDWIN W. MILLS, F.R.G.S., Author of "Gold Mining in Korea"

THOUGH Yunnan is the second largest province in the Chinese Republic it is not as widely known as it deserves to be. Mr. Edwin W. Mills, a well-known mining engineer throughout the Far East, the senior partner of the firm of Mills and Manning, Mining Engineers, of Peking, spent the latter half of 1918 in reconnaissance and exploration work in Yunnan, and he points out the great need for better means of transportation than are now employed. Mr. Mills considers that the extension of the Burma railway into Yunnan will enable the great resources of Yunnan to be developed to the highest degree and will make of it a most prosperous province.—ED.

Yunnan, *i.e.*, "Cloudy South," is the south-western province of China, and is bounded on the north by Szechuan, on the east by Kweichow and Kwangsi, on the south by Burma and Tonkin, and on the west by Burma and Tibet.

Though the second largest province of China it is one of the least known. It has an area of approximately 150,000 square miles, and its population is estimated at from 10,000,000 to 12,000,000.

The whole province is extremely mountainous, and an extensive plateau, ranging from 5,000 to 7,000-ft. in altitude, covers most of the eastern portion. This part contains larger plains and lakes than the western. The most marked characteristic of the western section of the province consists of the Mekong and Salween rivers, which flow through steep mountains and precipitous gorges for the greater part of their courses.

Most of the prefectural cities are situated in valley plains, and these plains are thickly inhabited. To this day may be seen districts which have never fully recovered from the devastation and ruin caused by the great Chinese Mohammedan rebellion which began in 1854 and ended in 1873.

The climate is generally healthy, with the exception of the valleys in the south-western portion and along the Tonkin border, which are malarial to a high degree. In travelling across Yunnan, more particularly in the south-western section and through the Chinese Shan states, it was noticed that an exceedingly small number of Chinese live at a lower altitude than 3,500-ft. This is due to the fact that the Chinese of Yunnan are more liable to fever in the valleys and low plains than any other people. The result is that the Shans occupy the low fertile plains of the south-west.

Owing to the generally mountainous character of the country there are no cart roads, and carts are seen only in a few of the cities, as in Yunnanfu and Mengtsze.

Freight and goods of all kinds are conveyed by means of ponies, mules, bullocks and coolies. During the dry season, from the end of October to the beginning of June, steady streams of caravans may be seen travelling along the regular routes from Yunnanfu to Burma, Tibet and Canton.

AUTHOR IN A FOUR-MAN CHAIR ON THE PAVED ROAD FROM HSIAKWAN TO TALIFU; GRAVES ALONGSIDE THE ROAD

Yunnan possesses great resources and large trade possibilities, but these will never be properly and profitably developed until railways are constructed.

The mountainous nature of the country is such that there are no navigable streams and the rough hilly trails are fit only for pack animals.

The five main caravan routes which connect Yunnan with the outer world are:—

(1) Yunnanfu to Bhamo (in Burma) viâ Talifu, Yungchangfu and Tengyueh, a distance of 505 miles, the journey taking from 24 to 28 days.

(2) Talifu to Batang, viâ Likiangfu, a distance of about 360 miles, and takes from 20 to 24 days; this route connects western Yunnan with Tibet.
(3) Yunnanfu to Canton, viâ Paisefu, on the West River, in Kwangsi. The overland journey from Yunnanfu to Paisefu is 355 miles and takes about 20 days. From this point the river is navigable to Canton.
(4) Yunnanfu to Ichang, on the Yangtze River, viâ Suifu; the distance to Suifu is 618 miles and takes from 32 to 36 days.
(5) Talifu to Lashio (in Burma), viâ Hsiakwan, Yunchow and Kunlong Ferry, on the Salween. The distance is about 360 miles and takes from 20 to 22 days.

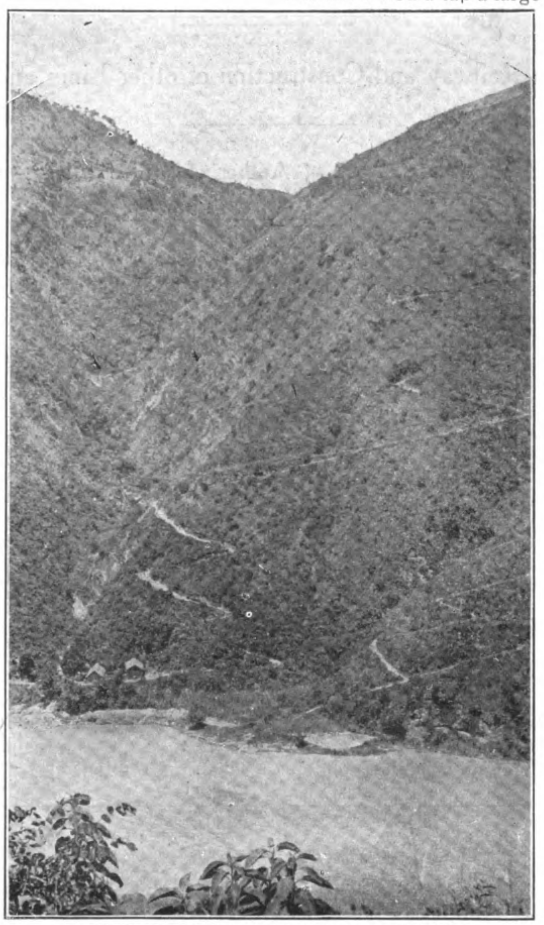
There is a railway terminus at Lashio, and Bhamo is connected by steamer with another railway terminus at Myithyina. Thus Burma is connected with Yunnan by two principal trade routes.

During the rainy season from June to October all traffic on the Kunlong Ferry-Yunchow section of the southernmost route is suspended, as the road up the Namting valley becomes one continuous series of mud holes which make travelling almost impossible.

On the main caravan route from Yunnanfu to Yungchang en route to Tengyueh and Bhamo, a great portion is paved with irregular stone blocks. As no attempt has been made to keep this trade route in repair sections of the road show no paving at all, and in other places the blocks of stone are missing or scattered and both pack and riding animals find it difficult going.

The roads throughout Yunnan cannot be called roads at all, and especially so during the rainy season; they are simply paths or trails for the passage of men or pack animals. To the Chinese mind apparently a road is any sort of a trail that is at all passable.

The best section of road seen during my trip across Yunnan was from Hsiakwan to Talifu, a distance of eight miles. This is paved with blocks of gneissic rocks which have become worn very smoothly through years of continuous traffic and are very slippery.



A ZIGZAG PATH ON THE LEFT BANK OF THE MEKONG
The Mekong runs through gorges with sides so steep that it can only be crossed in very few places

The main caravan route between Yunnanfu and Bhamo is kept open throughout the year because the large streams on the way are crossed by bridges, generally of the iron chain suspension type. Were it not for these bridges it would be impossible to cross the Mekong, Salween and Shweli rivers during the height of the rainy season. Most of these bridges are well constructed and are kept up more or less in a fair state of repair. They are built of from nine to fourteen iron chains stretched across and solidly anchored on each side of the river, while the two large suspension chains are securely fastened to piers on either side. Planks are laid on the chains for a roadway, and although the bridges sway considerably they will carry a good load. Periodical inspection of these bridges are made, and whenever necessary huge wooden windlass barrels are used to tighten the chains.

The crying need of Yunnan is better transportation facilities. After a trip down the Namting valley to Kunlong Ferry I am of the opinion that the Burma railway should be extended from Lashio to Kunlong Ferry, and the Yunnan railway from Kunlong Ferry to Yunchow. Eventually this line should be extended to Hsiakwan, which is probably the most important commercial town in Yunnan. The distance from Kunlong Ferry to Yunchow is 145 miles, and from Yunchow to Hsiakwan it is 109 miles. The line from Kunlong Ferry to Yunchow would tap a large area of country with great resources and would bring many important districts within range of Burma.

The principal crop in the Namting valley and the surrounding country as far away as Talifu is rice. Wheat, buckwheat, maize and millet are also cultivated to a large degree. Other agricultural products of this south-western district are tobacco, cotton, hemp, sugar-cane, tea, oil-producing seeds, various fruits such as oranges, pineapples, pears, peaches, plums, persimmons, pomegranates, etc., and many different kinds of vegetables.

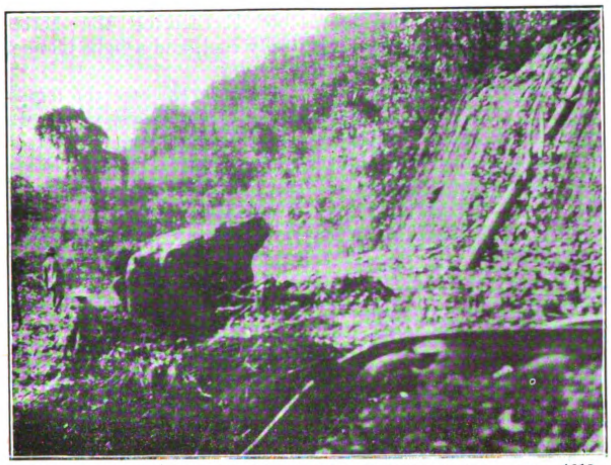
There is a great variety of live stock throughout the entire province, and the districts that would be served by a railway from Kunlong Ferry to Yunchow and Hsiakwan afford great opportunities for the raising on a large scale of sheep, goats, pigs, cows, ponies, mules, bullocks, and buffaloes.

Yunnan has also large mineral resources, and it is known that there are mines in every district. The principal minerals found are copper, lead, silver, zinc, gold, tin, and iron. Coal is also found in a number of places, but is generally of poor quality. Salt is also one of the most important productions of the province, and with better means of transportation the present output could be largely increased.

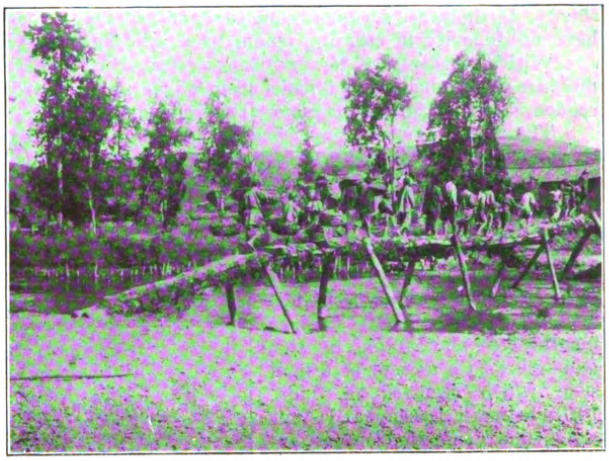
Jade and marble of excellent quality are found in the eastern part of the province.

Exploration work is being carried on under the order of the present provincial government to determine as far as possible the value and extent of the mineral resources of the entire western half of the province. It is to be hoped that the results of this work will be sufficiently encouraging to expedite the scheme for building the railway from Lashio to Yunchow, and eventually to Hsiakwan. This section will form one of the most important links in a through railway to connect Burma with the Yangtze and Eastern China.

It is worthy of notice to record that during my entire journey across Yunnan not a single opium poppy was seen,

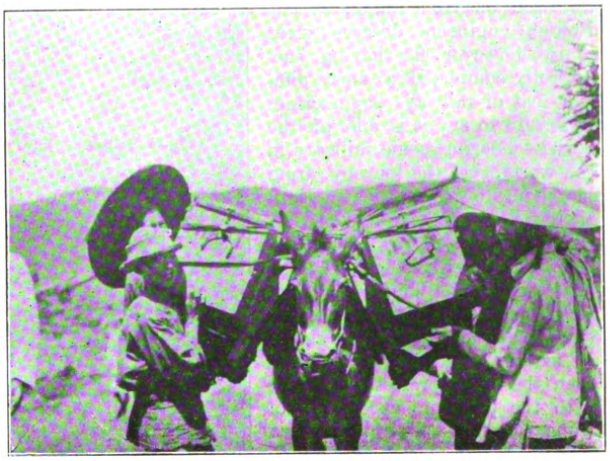


A LANDSLIDE NEAR LAHATI, ON THE TONKIN-YUNNAN RAILWAY, JUNE, 1918

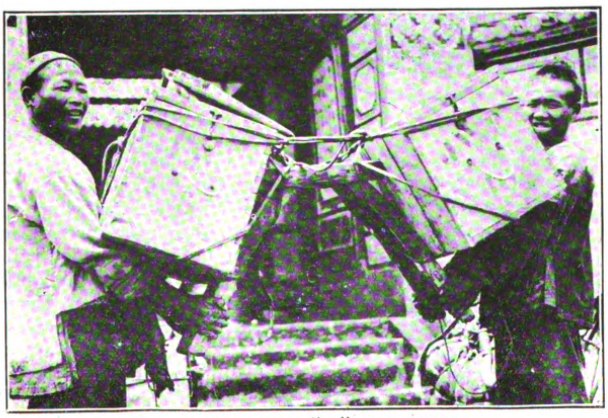


A VILLAGE BRIDGE NEAR YUNNANFU

CARAVAN FORDING THE YUNGPING HO



LOADING A MULE PACK EN ROUTE TO TALIFU



A YUNNAN DOUBLE "A" PACK SADDLE

A YUNNAN CART WITH WOODEN WHEELS

nor were there any signs of its cultivation. It was a different story, however, when the Burma frontier was crossed, for there the cultivation of the opium poppy was seen on all sides. As there are no guards on the frontier the Chinese have no difficulty in carrying opium back into Yunnan.

With the advent of better means of transportation the province of Yunnan should make tremendous strides in its economic, industrial and commercial development.

The writer's journey really began at Haiphong, the coast terminus of the Tonkin-Yunnan Railway, which was built and is controlled by the French. The distance of 535 miles between Haiphong and Yunnanfu is usually made in three days with stop-overs for the night at Laokay and Amichow en route. The trains are not run at night on account of the danger from land slides which occur frequently during the summer months. A photograph in this issue shows the effects of a land slide which occurred in June, 1918, between Laokay and Amichow, and made the journey extend to four days. All of the baggage and personal effects had to be transferred by pack coolies around this break in the line to a train sent out from Amichow. The French engineers deserve great praise, however, for having successfully completed a most difficult feat of railway engineering. It is safe to say it is one of the most wonderful scenic railways in the world, and the journey from Haiphong to Yunnanfu, viâ Hanoi, is well worth making.

Yunnanfu is a walled city 6,400 feet in altitude, and has an estimated population of 100,000, including the inhabitants outside the city walls. This city is cleaner looking and more advanced than the other prefectural cities with the possible exception of Yungchangfu. There are two small hotels under French management where one may live very comfortably. The French community predominates, and is further augmented in numbers during the beginning of the summer months when French residents from Tonkin and as far south as Saigon come to this healthy town to recuperate from the effects of the trying climate of Indo-China.

PORTION OF THE PAVED TRAIL BETWEEN YUNNANFU AND TALIFU

Next in numbers are the Japanese, then come the British, American, and a smattering of other nationalities. The French, Japanese and British have consular officials representing their interests, but the Americans have none, and have apparently not realized the rapidly growing commercial and political importance of Yunnanfu. The French have established a bank (Banque Industrielle de Chine), and have also a number of important commercial houses. There are also a well equipped French Hospital and a French Post Office.

The Standard Oil Company interests are in the hands of a very competent American, while the interests of the British-American Tobacco Co., Ltd., are in the hands of an equally competent Britisher. The other nationalities are employed in the Chinese Customs and Postal services.

The climate of Yunnanfu is excellent, the summer temperature seldom rising above 85° F. During the hottest months the evenings are delightfully cool, and a light blanket, at least, is necessary for bed covering.

From Yunnanfu the writer's journey was over the regular caravan route to Talifu, a distance of 220 miles, which was made in 13 days. As this was made during the rainy season the so-called road in many places was simply a mire. Wherever portions of the paved road were missing one's pony would slide from the paving blocks of sandstone or limestone into mud holes. Travelling under these conditions was both slow and difficult. The first night out from Yunnanfu was spent in the "Ritz-Carlton" of Anningchow. In all my years of travelling through the Far East I had never seen before such attacks in force by vermin whose sole aim was to enter our cots and crawl all over us. Thereafter, with one exception, we either slept in a temple or pitched our tents. The temples were usually comparatively clean, and, strange as it may seem, quite free from vermin.

The filth, dirt, and vermin that were seen in some of the villages en route to the Chinese Shan States simply cannot be described in polite language. How the inhabitants exist in the midst of all this is beyond my conception.

The average Chinese inn is a bedlam of noise at night; on the other hand the temples where we stopped were quiet and enabled us to enjoy restful sleep.

On our arrival at Talifu we were installed in a very clean portion of a temple just outside the city walls. Seldom has it been my good fortune to see a city with a more picturesque setting. As one approaches the city one can see a number of very fine pagodas that are visible long before the city is reached. These pagodas are said to have a history of 1,500 years, and were erected to the spirits of the "earth, wind, and water."

Directly back of the city is the Tsangshan range, which rises to a height of 14,000 feet. About 1½ miles to the east is a beautiful body of water known as the Erh Hai, about 24 miles long and from three to six miles in width. Fishing and sailing boats were much in evidence, the latter for carrying passengers and freight to various points on the lake. Talifu is 6,700 feet above sea-level and also enjoys a delightful climate. Some day when the railway is extended from Burma to Hsiakwan this city will become popular as a summer resort for the residents of Burma.

The next journey was from Talifu to Yungchangfu, another prefectural city situated in a large fertile and well populated plain. The city is well laid out with broad paved

The First Railway in China

Some little known details of the Original Shanghai-Woosung line

Nearly all of us know that the first railway in China was a narrow-gauge line between Shanghai and Woosung. Agitation for it was begun in 1865, with the result that in August, 1875, the Woosung Road Company came into being for the purpose of building a line of 2-ft. 6-in. gauge over the length of nine miles between the city of Shanghai and the village at the mouth of the Whangpoo. In the article we have given some details of the first railway which have been taken from an old manuscript, and have reproduced some rare old photographs of the time the line was under construction and in operation. The brief career of this insignificant stretch of railway meant so much in the history of railway transportation in China that many of the details, and the fading photographs, are printed here for the sake of their preservation.

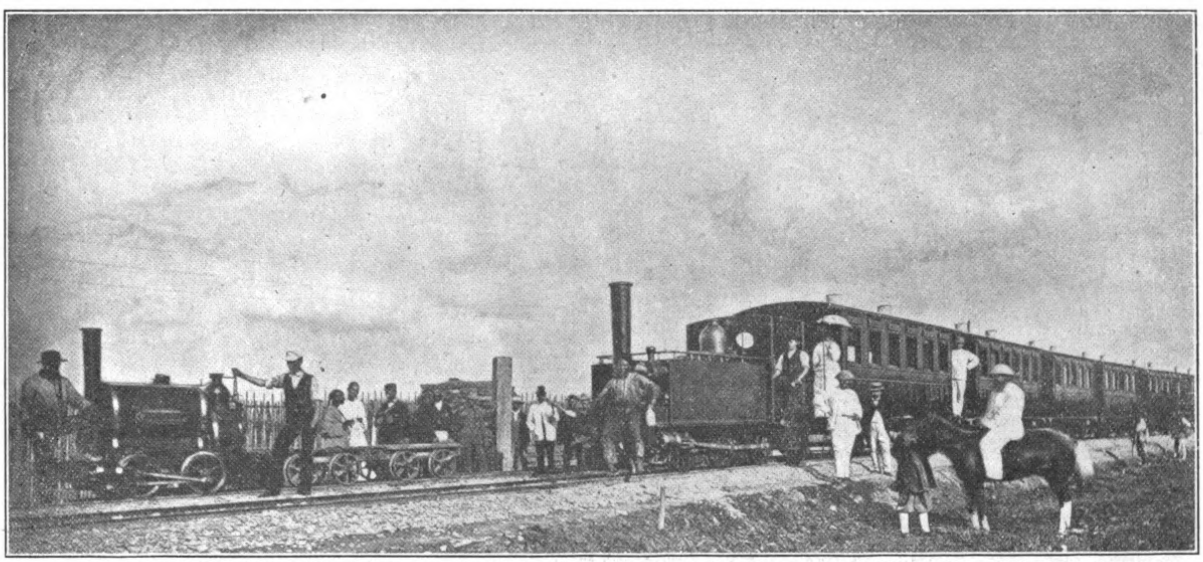
THE EDITOR.

* * *

It was in October, 1875, that Mr. Gabriel James Morrison, M. Inst. C. E., left England for Shanghai, viâ America, thus marking the beginning of the little railroad which was to run between Shanghai and its neighboring village of Woosung and to open China to steam communication on land; for he was appointed to hold the two-fold office of company's engineer and contractor's agent for the Woosung Road Company, which had been organized in August of that year. In the same month five other brave souls who were to become his assistants sailed from London to Shanghai direct, by the steamer *Glenroy*. These were John Sadler, foreman; Wm. G. Jackson, chief working engineer; David Banks, second working engineer; John Sadler, jun., second foreman; and George Sadler, general assistant. All of these men set out stoutheartedly, although each must have felt some misgivings at the great odds they were to face in having part in the construction of a railway which was to overcome the prejudices of the Chinese, who were only just becoming

THE FIRST LOCOMOTIVE WAS INTRODUCED IN CHINA ON THE SHOULDERS OF COOLIES. SIXTEEN MEN CARRIED THE "PIONEER" FOR "THREE FURLONGS WITHOUT STOPPING TO DRAW BREATH"

accustomed to steam transport on the water and were vigorously opposed to seeing their lands encroached upon, the peace of their dead disturbed, and the occupation of their boatmen and carrying coolies taken away by the "fire carriage," as they came to know the locomotive. They had to face, also, the perils of disease and all the other evils which



HERE ONE OF THE 9-TON ENGINES WHICH SUCCEEDED THE "PIONEER" IS COUPLED TO THE FIRST TRAIN ON OPENING DAY. THE LITTLE ENGINE IS RELEGATED TO A SIDE-TRACK

the pioneers of the time were forced to undergo. One of them, Mr. Sadler, suffered so much from dysentery that he was sent to Chefoo for a change of air, where he died on September 15, 1876. But the *Glenroy* landed at Shanghai on December 20, 1875, and Mr. Morrison arrived on January 8, and all hands set to work, for they had brought with them the necessary materials for the beginning of the little line, including the "Pioneer," a little locomotive weighing but 30 cwt. in running order.

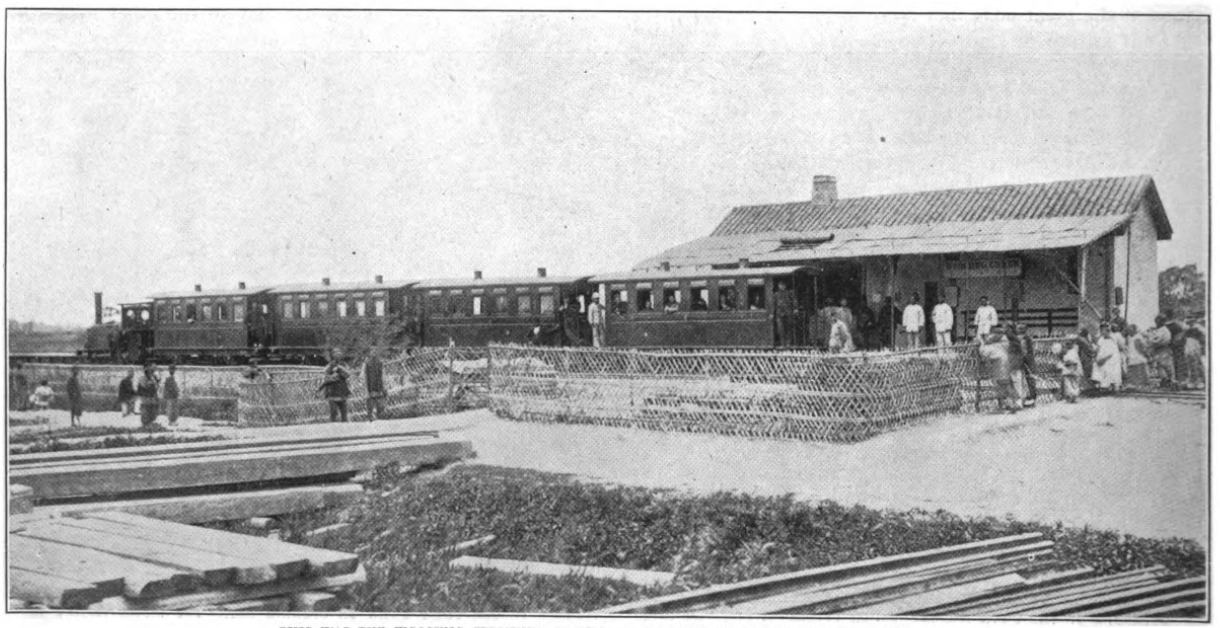
The purchase of the land was the chief difficulty, and the extent of the negotiations which were carried out can be imagined from the fact that there were over 400 families who had to be consulted and who had to reach a decision before the 9 miles right of way was purchased. In many instances ownership consisted chiefly in a grave of some relative more or less valued in life, but highly valued in view of an approaching railway. However, the difficulties were all overcome sooner or later by the liberal use of silver and without any dispute or disturbance. One unfortunate man who had negotiated the sale of some land to the company was haled before a magistrate and beaten to death; but his offence was announced as an attempt at defrauding a relative of his proper share of the purchase money. His land was on the further side of a wide creek at the Woosung end of the line, and perhaps part of the offence for which he lost his life was really that of giving the railway a footing on the further side of what might have been considered as a natural barrier.

Besides purchasing the land, it had been necessary to proceed with the earthwork to prevent the old owners from re-entering and cultivating it again, as they would have done if it had not been visibly occupied. For this reason a practicable embankment, eight feet in height, was thrown up to insure possession.

The staff, upon arrival, gave its first attention to the building of about 15 small wooden bridges over the various creeks. So numerous were the watercourses on the route that, in addition to the bridges, some 20 wooden culverts were constructed. On January 20, 1876, rail-laying was begun when Mrs. Morrison drove the first spike into the first rail. After that the laying of plates and the work of ballasting progressed with rapidity. On February 14, 1876, the "Pioneer" made its first trip over three-quarters of a mile of rails, and the news was cabled to the promoters in England. Thousands of Chinese flocked to see the little engine at work. The Taotai of Shanghai became greatly alarmed at the interest of his subjects in the institution, and so pressing were his demands for a discontinuance of the work that a compromise had to be made. It was agreed that the engine would not be run for a month, but construction was to proceed until he should receive definite instructions from Peking. When the month had expired, and no adverse instructions had been received from Peking, the trips of the "Pioneer" were resumed. The interest of the people, whose curiosity had been roused by the antagonism of the officials to the construction of railways and had been further sharpened by the stoppage and resumption of the "Pioneer's" trips, flocked to see the working of the little locomotive in numbers greater than before.

Hundreds of natives gratified their ambitions to ride on the "fire carriage," and on every return trip there were gratuitous passengers. Nor was this desire to try the railway limited to the lower orders. Several times during the progress of the works, Chinese passengers of high rank came for a ride, arrayed in their best clothes. No other accommodation was available, so on such occasions Mr. Morrison would have seats placed in the trucks, which were covered with red baize, while a carpet of the same material was laid in the truck. As the works approached completion, various sinister rumors began to float in the air as to the intentions of the officials, and a very politic step was taken in inviting various Chinese notables and all the foreign consuls to take an excursion trip. All attended in full uniform to give the full weight of their official position in the right direction, and the excursion took place on May 26, 1876, when the passengers seated themselves in five ballast trucks temporarily converted for passenger carrying and took a ride of five miles.

The work continued to go on without interruption. On May 30, 1876, the first of the permanent engines, weighing but nine tons in working order although large in comparison with the "Pioneer," arrived and work was begun on its erection. On June 12 it made its first trip—this time to

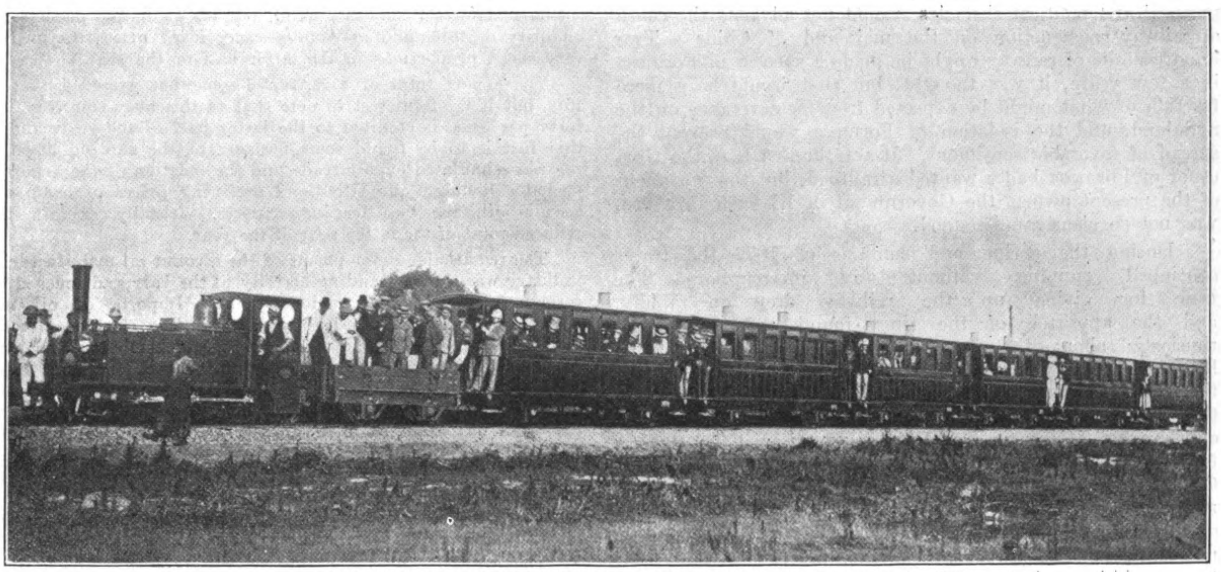


THIS WAS THE WOOSUNG TERMINUS OF THE SHORT-LIVED SHANGHAI-WOOSUNG LINE

Kiangwan, a journey which it performed at the rate of 25 miles an hour. The carriages arrived at about the same time. The first-class carriage was 15-ft. in length and accommodated 16 passengers; the second-class vehicle was of the same length, but accommodated 18 passengers; and four third-class carriages each accommodated 96 passengers in a length of 18-ft. Twelve goods trucks, 10-ft. in length, with a carrying capacity of 5 tons, arrived at the same time. At that time it was found that the proportion of third-class passengers entirely outbalanced the passengers in the other classes, and this holds true on Chinese railways to this day. The proportions then were 80 third-class passengers to one first and two second-class passengers.

As July 1 had been specified as the day for opening the railway, on June 30, 1876 about 150 of the European residents were invited to make the opening trip of the first permanent train, over the first five miles of the line. The feat was successfully performed when a train laden with 200 passengers made the run at a speed of 15 miles per hour. On the next day the Chinese were invited to travel free on the railway, and great, indeed, was the crowding to secure places in so small a means of conveyance. All went well, to the great delight of the people. On July 3 traffic commenced, and receipts were at once of the most satisfying character. The news was transmitted to England, whereupon the company gave a dinner at the Langham Hotel to celebrate the event, on July 20. On the same day the telegraph brought a demand from China for another complete set of carriages. The request, coming on the very day of the feast, seemed to the subscribers a good omen for the fulfilment of their best hopes. Of course the carriages were manufactured and sent out to China without delay.

All went well until August 3, 1876, when an unfortunate native was killed by a train. The man was walking towards the train. When the whistle blew he stepped from the line, but, still headed for the train, he stepped on the track again when the locomotive was about six yards from him. It is interesting to observe that this is the only case of suicide on record in the history of the first railway in China, despite the fact that some of the older reference works on China published abroad made extinction under the wheels of a moving train the favored means of suicide in China. The one man whose death by this means is mentioned in connection with the Shanghai-Woosung line appeared to be a soldier. No one turned up to claim damages for his death, nor even could any evidence be obtained as to his name or identity. He appeared to have been without means, without friends, and alone in the world —these conditions often making for suicide in China. It was, at any rate, clear that he had not been hired for the purpose, for in that case relatives would have been produced to claim damages and to assist in the clamor. David Banks, the engine driver, was put on trial before his Consular Court for manslaughter. He was honorably acquitted, and costs were given against the court. At about this time the British Minister was engaged in settling the dispute about the death of Mr. A. R. Margary, who, while acting as the interpreter and guide to Col. Browne's mission from Burma, was killed at Manwyne, Yunnan, on February 21, 1875, after having crossed the frontier in advance of the main body of the mission; and it appears that the Chinese did not press claims for the death of the soldier under the train, preferring to hold the case as an offset to the claim for the death of Mr. Margary at the meeting of plenipotentiaries which was held in Chefoo. The conclusion of the Chefoo Agreement took place on September 13, the terms embracing articles aimed at opening the way between India and Yunnan; opening new ports to trade; giving British importers of opium the right of keeping the product in bond until selling time, when duty would be paid, etc. Meanwhile, on receipt of a communication sent by special steamer from Chefoo, to the railway committee at Shanghai, asking that trains should cease running pending negotiations, for fear that some serious accident might happen which would bring about complications, the line was closed down on August 23. After the Chefoo Agreement was signed, negotiations were commenced on the subject of the railway. It was now found that a mistake had been made in closing it. Its first position was unassailable on any just grounds, but the Chinese urged that in all other countries railways are under government control, while in China there were no laws on the subject of railways. But the railway had been closed pending an international discussion, and this virtually placed the whole undertaking at the mercy of the Chinese. The terms eventually made were that the provincial government should buy the railway at a price corresponding with its cost; that the money should be paid in three half-yearly instal-



FOREIGNERS CROWDING AN EXPERIMENTAL TRAIN AS GUESTS OF THE RAILWAY

ments, and that until the whole should be paid the Company should work the line. These arrangements were made with the assistance of Mr. Mayers, Secretary of the British Legation. The first instalment was paid down, and this gave the railway just one year of grace for practical work. This being secured, the other items of the bargain were not so closely scanned for the desideratum was to give China one year of railway experience, with the hope that only one result could follow. Even the stipulation that no goods were to be carried was not seriously dwelt upon, although this stipulation deprived the railway of more than half its earning power.

The line was reopened, with seven trains daily in each direction, and first-class fares given at 50 cents to Kiangwan and $1 to Woosung Bar or Woosung Creek; second-class fares at 25 cents and 50 cents respectively; and third-class fares 100 cash and 200 cash respectively. It was announced that 1,200 cash would exchange for one dollar, and that dogs would be charged 10 cents each for any distance. So much labor was involved in counting the cash that the company issued tickets at so many to the dollar. The second opening took place on December 1, 1876—this time the whole distance to Woosung. Many Chinese of high rank attended this time, and drank success to the undertaking in the champagne of the Company. The Taotai and his officers were of course invited, but finally decided not to take such a very serious step.

Trains continued to run steadily, the traffic frequently amounting to £27 per mile per week, this nearly equalling the average receipts for passenger traffic on English railways, although but one train was at work. The limited tenure of the company rendered it unadvisable to purchase additional engines and carriages, and the use of but one train was continued.

At first it was hoped that the Chinese would continue the working of the line after the completion of its purchase, but as time passed away and no definite arrangements were made this hope gradually disappeared. As it became apparent that the government intended to abandon the railway, and that the Governor of the island of Formosa intended to construct a line from one end of the island to the other, in 1877 Mr. Morrison paid a visit to Formosa. After investigation it was thought that the construction of a railway in Formosa, although this appeared an impossibility because of physical and political obstacles, would not advance the cause of railway construction on the mainland of China. Two hundred mile of railway might be made a success in Formosa in a few years, it was thought, but that would be a mere fraction of what might be expected from perseverance on the mainland, and the isolation of Formosa would prevent the spread of favorable sentiment. It was known that the Governor of Formosa badly wanted a railroad, but the sentiment of the present owner, the Government of Kiangsu Province, was not so clearly understood.

During the spring and summer of 1877 the trains continued running without any interruption. The time for giving up the railway drew on rapidly, and the approach of the time found the people enthusiastic about the continuation of its service. They had found that the value of their property had increased, that trade had been extended, and that no one had been thrown out of work by the railway. Some 145 merchants of Shanghai, Kiangwan and Woosung petitioned the Viceroy for a continuation of the service, but no reply was received. On October 20, 1877, the final instalment of the purchase money was to be paid, when the line passed into the hands of the Chinese authorities. On October 19, officials, commissioned for the purpose, intimated to the company that they would be ready to pay the balance of the purchase money the next day. It was then arranged that the last train should run from Shanghai at noon and from Woosung at one o'clock on the 20th. At two o'clock the road was handed over. A special train was made ready for the officials, to enable them to inspect their newly acquired property; but they preferred to make the journey in their official chairs. It took three hours for their journey to Woosung, and nobody knows how many hours in returning to Shanghai. Their preference for their own means of travel afforded an excellent illustration of the contrast of views of the governed and the governing. The closing scene showed the people crowding the railway, with the last train the longest and the most crowded in its history, and their rulers preferring chairs!

Rails and roadbed were torn up and wiped out, buildings were pulled down, and all the material was shipped to Formosa shortly afterward. With the materials rusting away on a Formosan beach, the story of the brief career of the first railway in China is ended. Now we know that the railroad history of China is really just begun, for in the long intervening years progress in building has been slow and China has now only a moderate beginning for a national railway system as we understand it in Western countries.

Philippine Foreign Commerce in the Year Ending June 30, 1919

Full returns of Philippine foreign trade for the year ending June 30, 1919, just compiled and made available by the Bureau of Insular Affairs of the War Department, show still further increases in the value of both imports and exports over the already exceptional totals of the previous year.

The import total reached the enormous sum of $107,774,263, or about thirty per cent. more than that of the previous year, and about double the pre-war average, but advancing prices rather than increased volume of business was the leading factor in the larger figures. An important exception, however, is to be noted in the machinery trade, which more than doubled in value and was conspicuously made up of oil-extracting and sugar machinery, large imports of which for the development of leading export industries of the islands, represent both a present and a future importance to Philippine trade. The important trade in cotton textiles, on the other hand, fell far below the phenomenal quantity of 1916, and at equally exceptional prices declined to very small proportions in the latter half of the year.

The export total of $122,729,238 somewhat exceeded that of 1918, but it is of interest to note that of this huge sum less than forty per cent. is credited to the latter half of the year, and in this fact is to be found some measure of the slowing down of the war-stimulated export trade and the reaction of the armistice period. Reduced quantities and declining prices of hemp and coconut oil, the two leading exports, virtually explain this reduced total of the latter part of the year.

The remarkable development of the coconut oil manufacturing industry was the outstanding activity of the year and touched the foreign trade figures at various points. Imports of oil mill equipment furnished the leading item in the machinery total, while exports of oil became a close rival of hemp for leadership in the islands' trade. This reacted upon the important copra trade of the past, which virtually disappeared in the latter half of the year, while in the same period the islands, with a pre-war record of one of the largest copra producers for export in the world, passed into the ranks of the importers. Imports during the closing six months amounted to 17,093 long tons—chiefly from Dutch East Indies, while shipments at the end of the year had dwindled to merely nominal amounts from the outlying southern ports to the neighboring market of Singapore.

The armistice proved highly beneficial to the sugar trade. Distance from the important markets operated unfavorably to the

time—as far as the eye can reach, the varied foliage of trees, constitute a view which no one will forget and all will linger over. To the south the Temple of Heaven rises boldly from the tree tops, and on the north Coal Hill, the Bell and the Drum Towers likewise stand out in delightful color, while in the distance on all sides can be seen the attractive towers of the gates of the Tartar Wall. It is not difficult to say which will be the most appreciated rendezvous in Peking when the hotel opens.

Messrs. Brossard, Mopin and Cie are the contractors, their architect being Mr. Wielmacker.

China's Through Traffic Arrangements

In the September, 1919 issue of the FAR EASTERN REVIEW an article was published giving the history and work of the conferences which have had in hand the arrangements for passenger and freight through-traffic on the Chinese railways. A further conference has just been held in Peking, having been called by the Railway Through Traffic Administration of the Ministry of Communications, Peking, of which Mr. Y. C. Whang, Chief of the Railway Department, is the efficient Director. This conference, which makes the seventh of the series, discussed questions mainly relating to passenger and goods traffic, and agreed to:

The extension of stop-over privileges to holders of through tickets on China's railways;

The selling of tickets at reduced prices to parties of six persons or over belonging to a theatrical, circus, or concert party, or to clubs travelling to play matches, such reduction to be 20 per cent. off single fares and 40 per cent. off return fares;

A reduction to students returning home on vacation of 25 per cent. on single fares and 50 per cent. on return fares;

The establishment in big cities of enquiry offices for the sale of tickets, etc.;

The booking of passengers and baggage one day in advance of date of travelling. After passengers have complied with Customs regulations baggage may now be forwarded one day ahead of their departure;

The provision of through rates for private and passenger cars to parties not less than 20 first-class, 35 second-class, and 50 third-class;

An increase in weight of through parcels to 100 catties and 10 cubic feet, or 300 cubic decimetres respectively;

Free storage of parcels for seven days, a charge of ten cents per day to be levied in case of non-delivery; after six months parcels undelivered to be disposed of according to the instructions of senders or at the discretion of the railway officials concerned;

Interchange of rolling stock according to the draft regulations compiled by the Railway Clearing House. A flat rate of 10 cents per ton hire charge shall be made on tonnage balances, lines detaining cars loaned beyond a period of 12 days to be penalised to the extent of 40 cents per ton carrying capacity, but no charge on hire or demurrage shall be made in case of floods or other unavoidable causes. No charge is to be made on cars travelling on other lines than their own for the purpose of loading coal or materials for the use of their own line. Provision is also made for the repair of damage and loss of fittings, etc., and for hire charges for passenger cars;

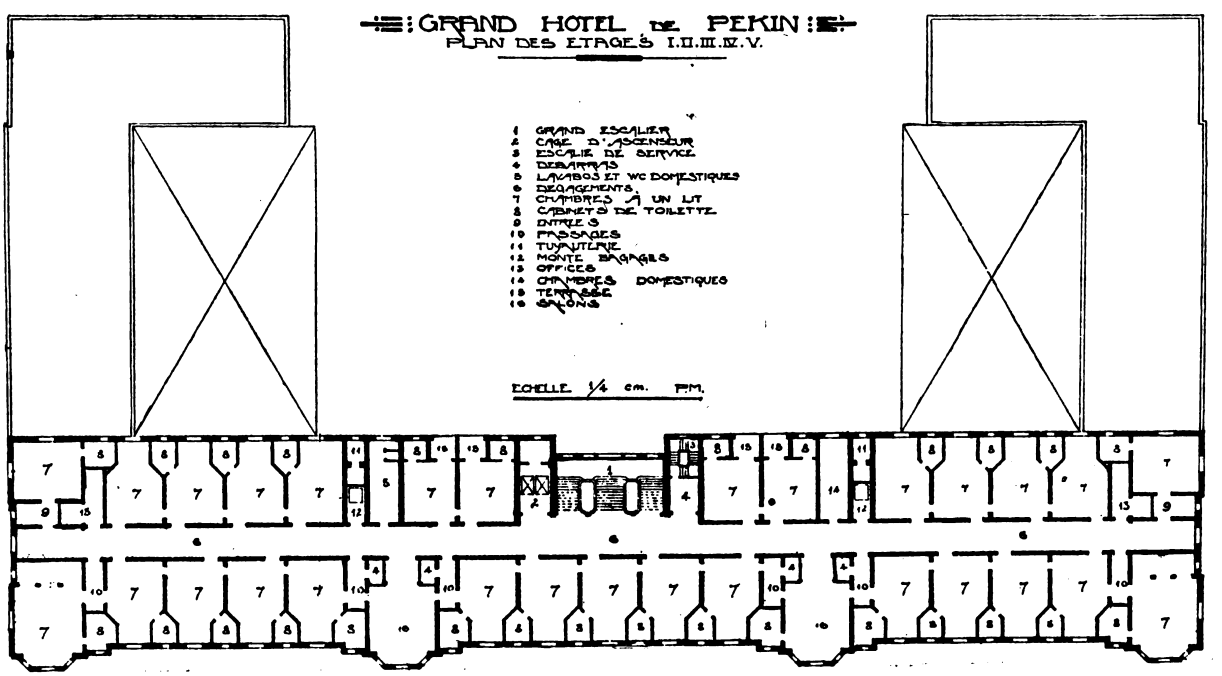
The classification of goods, and the charging of picul, ton, and car load rates for general goods, the tapering system to be applied in fixing rates;

The standardization of traffic forms;

The adoption of the metric system, preparations in connection with which are to be made by the Railway Through Traffic Administration, which will prepare an elaborate scale of comparative weights and measures; and

The unification of telegraph codes.

We have given the results of the last conference in the briefest form but those who understand the character of the various lines making up China's railway system as it is at present will appreciate the importance of the work done. A few years ago each line ran its own business in its own way, and each way was different. There were British, French, German, and other systems and languages in vogue, and no co-operation between the various lines. With recent years remarkable strides have been made towards a proper definite co-ordination of work, and it can be said with certainty now that the Through Traffic Administration and the Unification of Accounts Department have the whole of the lines under control, and that being the case the services rendered by the railways to the public are bound to be increasingly better and the results of far-reaching importance to the country. Mr. Y. C. Whang, Director of the Through Traffic Administration and the representatives of the various lines constituting the conference are to be congratulated on the results attained.



Chinese Government Railways in 1918

Results are the Most Favorable in History of the Government Lines

The Ministry of Communications announces the complete and final tabulation of the returns for the year 1918. Since considerable time will be required to print the full report with its many analytical summaries and diagrams, a synopsis of the extensive volume is given to the press in advance. It will be observed that the appearance of these results at this time marks the achievement of a goal toward which the Ministry has been striving for some time—namely, the prompt and regular compilation of railway statistics. It may now be said that these reports are "on time."

Compared with the year before, revenues show an increase of $13,778,000—or over 20 per cent. While expenses show a considerable increase also—$4,282,000. Net revenues were $9,496,000 in advance of the year before or almost 30 per cent. At the same time interest payments and similar items decreased to such an extent that net income debits, showed a decrease of $2,378,000. The final result is that the surplus for the year is $33,505,000. This sum is nearly $11,875,000 more than the same result in 1917—an increase of more than 50 per cent. This comparison is fully as good as it appears, for while there were some depreciated bank notes included in the totals in 1918, the quantity is not so large by half as that in 1917. Among cash and special funds in 1918 these notes amounted to some $6,000,000, while in 1917 these items amounted to fully $12,000,000. In both years, of course, a certain proportion of such notes had been earned in the year previous.

The results upon the individual lines are shown by the following summary which shows revenues, expenses, net revenues, net income debits, and surplus for the year upon each line.

It will be observed that net operating revenues are sufficient to meet all net income debits, such as interest, taxes, rentals, etc., more than four times over. The surplus for the year is equivalent to a 29 per cent. return upon the permanent Government investment in the combined lines.

As the report will point out, these results are abnormally favorable, and the year 1919 should not be expected to show a similar increase over 1918. The reason for this is that the year 1917, with which comparison is made, did not show normal revenues due to floods and other disturbances. In addition considerable traffic which naturally should have moved in 1917 was left over until 1918 and swelled the normal traffic. On top of this, the season of 1918 was unusually favorable. Crops were heavy and there was practically no interruption to the lines. The only exception of importance to this statement was the closing down of the Peking-Suiyuan during the early months of the year as a measure of "plague" prevention.

As would be expected, operating percentage, or ratio, shows a considerable decrease. It stands at 44 compared with 47 in 1917 and 52 in 1915. The present figure is probably the lowest average in any country on the globe. Several lines show much better percentages, but the total is raised because of the unfortunate position of certain lines isolated from fuel supplies or without traffic connections. The individual lines rank as follows:

Peking-Hankow	33.1	Chinese Government Railways	44.2
Peking-Mukden	33.5	Shanghai-Nanking	61.1
Cheng Tai	41.7	Peking-Suiyuan	65.1
Taokow-Chinghua	44.9	Shanghai-Hangchow-Ningpo	86.2
Tientsin-Pukow	56.2	Chuchow-Pinghsiang	89.6
Kaifeng-Honan	55.4	Canton-Kowloon	112.9
Kirin-Changchun	60.5	Changchow-Amoy	187.5

Such an operating percentage naturally leaves large net revenues. The proportion which these bear to the investment in the various lines indicates the wisdom of the investment, provided sufficient time has elapsed to prove inherent possibilities. Unfortunately in several cases, plans for the completion of lines have been held up by unavoidable causes, and the possibilities have not been proven, but for the most part very creditable returns upon the sums invested have been earned. This is reflected in the following summary, in which the per-

SUMMARY 1.

	Revenues (gross)	Expenses	Net Revenues	Net Income Debits	Surplus for the Year
	$	$	$	$	$
1. Peking-Hankow	23,822,621.24	7,977,853.50	15,844,767.74	2,456,899.85	13,387,867.89
2. Peking-Mukden	20,853,532.26	6,903,148.24	13,950,384.02	less *29,216.28*	13,979,600.30
3. Tientsin-Pukow	12,603,359.05	6,334,726.56	6,268,632.49	3,554,116.57	2,714,515.92
4. Shanghai-Nanking	4,863,436.58	2,969,195.92	1,894,240.66	987,041 21	907,199.45
5. Shanghai-Hangchow-Ningpo	2,397,350.59	2,066,830.96	330,519 63	467.007.14	less *136,487.51*
6. Peking-Suiyuan	4,394.397.58	2,859,949.12	1.534,448.46	123,542.60	1,410.905.86
7. Cheng Tai	3,210,437.29	1,337,384.15	1,873,053.14	418,034.08	1,455,019.06
8. Taokow-Chinghua	948,917.33	426,453.83	522,463.50	402,069.84	120,393.66
9. Kaifeng-Honan	1,270,205.45	703,622.51	566,582.94	419,351.51	147,231.43
10. Kirin-Changchun	1,776,144.09	1,075,219.57	700,924.52	424,687.12	276,237.40
11. Chuchow-Pinghsiang	554,392.78	552,598.44	1,794.34	less *1,444.21*	3,238.55
12. Canton-Kowloon	911,199.00	1,029,082.52	less *117,883.52*	477,067.09	less *594,950.61*
13. Canton-Samshui. Not reported.					
14. Changchow-Amoy	46,159.71	86,549.80	less *40,390.09*	125,261.74	less *165,651.83*
Chinese Government Railways	77,652,152.95	34,322,615.12	43,329,537.83	9,824.418.26	33,505,119.57

cent which net operating revenues bears to cost of road and equipment is shown by lines :

SUMMARY 2.

Peking-Mukden	22.7	Peking-Suiyuan	5.6
Peking-Hankow	15.8	Kaifeng-Honan	4.2
Kirin-Changchun	10.6	Shanghai-Hangchow-Ningpo	1.5
Chengting-Taiyuan	8.4	Chuchow-Pinghsiang ...	0.0
Taokow-Chinghua	7.1	Canton-Kowloon	Deficit
Tientsin-Pukow	6.2	Changchow-Amoy	"
Shanghai-Nanking	6.2	Chinese Government Railways	10.4

These results have been made possible by increased business and improved efficiency. Passengers carried one kilometre increased 9 per cent. and tons hauled one kilometre increased 24 per cent. In 1918, 229 passengers were carried per train compared with 211 during 1917, and in goods service there was a similar increase from 244 to 257 tons per train. Thus the additional passengers were carried with practically no increase in train service, while the 24 per cent. increase in goods traffic resulted in only 17.6 per cent. increase in goods train kilometres. There is a noticeable increase in the average length of haul per ton. The typical ton of goods in 1918 was hauled 184 kilometres compared with 165 in 1917 and 141 in 1915. Rates have remained unchanged.

Very little change was made in the physical property during the year. Two short branches, aggregating 28 kilometres were built. The investment in physical property upon all lines increased some $4,336,000. Seven new locomotives were purchased. The seating capacity of carriages was increased by 1,506 seats—2 per cent. Goods stocks was increased by 21 wagons built and 200 leased on a permanent basis. The performances of all of these units were much larger than in 1917. The Government's equity in the property was increased by $7,664,000 through additions to property and repayment of funded debt through surplus and the increase of permanent Government investment. Mortgage bonds were reduced by $2,550,000.

"Damn the Tael"

The average business man in the Chinese treaty ports, who has to wrestle with the mysteries of currency exchange which are presided over by the foreign bank, where big transactions are concerned, and by the Chinese exchange shop in matters of petty cash, comes to regard the tael as some hypothetical conjuring medium, like the atomic theory, the fourth dimension, the philosopher's stone or the doctrine of the trinity—designed for his special obfuscation.

The tael is a Chinese weight, a sixteenth of a Chinese pound, or catty, which is a third heavier than the English pound. Since there was no silver or gold currency in circulation in China before the coming of Occidentals, the precious metals, when used as mediums of exchange, were handled in the form of bullion and prices were quoted in ounces, or taels as the Portuguese called them, or *liang* as the Chinese themselves say. The use of uncoined metal afforded every opportunity for abuse by the dishonest merchant or the professional money changer. Weight varied from one locality to another, the silver, which was the commonest metallic medium, was subject to alloy and the scales of every shopkeeper could be adjusted so as to give him the benefit of the doubt, whether he was buying or selling. When Mexican dollars and other standard coins began to be introduced into the Chinese coast ports, the Chinese quickly saw the advantage of handling them and quoting in them, and wherever they were available in sufficient quantity, the discussion of silver weights was forgotten and the dollar or some similar coin became the standard.

There are still districts in China to which the dollars have not come in sufficient quantity to warrant the discarding of the old-fashioned scales and testing stones, but in the Treaty Ports one would have to travel far and search carefully to find any merchant but a money changer or a silversmith weighing out bullion. It is only in government offices in foreign firms and in the banks with which these institutions perforce deal that one hears the tael discussed and quoted with familiarity. The banks in the Far East have held to the tael as a theoretical standard of exchange, and while a man may buy and sell on the street for a lifetime in Shanghai without ever seeing Chinese bullion or having to figure out the relation of the dollar to the Chinese ounce, he no sooner enters a customs office or a bank than he meets this ghost of a crude and barbarous system of transfer, and begins to pay substantial tribute to it.

The Chinese Government which still collects taxes and dues over larger areas not yet blessed with other coinage than the copper cash, and in other still larger districts in which the chopped dollar, the yen, the rouble, Spanish dollars and provincial coins of different weights and qualities are in local circulation, has some apology for adhering to the silver weights as the standard, but, to its credit, it took the initiative several years ago in a movement to abolish the tael as the official medium, and, according to report, it is about to revive a campaign with this object in view.

It is said that the President's Financial Commission, which has made several sane but radical suggestions in recent months, now proposes to abolish not only the official "Treasury Tael" but also the Customs or Haikuan tael, and to fix all taxes and duties in dollars. As this suggestion happens to be coincidental with a resolution passed by the Conference of British Chambers of Commerce in Shanghai to abolish the use of "sycee," or bullion, and to encourage the standardization of the dollar and of subsidiary coins, there seems to be some hope at last of knocking a little of the black magic out of the exchange business which is so utterly incomprehensible to 90 per cent. of the European traders in the Orient, who simply do business according to the formula supplied by the banks and seldom presume to understand or "to reason why."

A lead in the direction of discarding the tael has long been given by the Salt Administration, which does all its transactions in dollars and refuses to recognize the tael. "Damn the Tael," was the cryptic rejoinder of Sir Richard Dane, whilom head of the Administration, when asked why the Administration's accounts were not kept in taels.

M. Suvoroff, Director of the Russo-Asiatic Bank at Kuldja, Sinkiang, recently completed a motor car journey to that remote centre from Fengchen, the present terminus of the Peking-Suiyuan railway. M. Suvoroff started out with two Packards and one Ford, among the party being Mr. Taylor, of the Standard Oil Company's Kiukiang office. At Juchen, the junction of the road to Kuldja and Urumchi, the party divided, M. Suvoroff going on to Kuldja and Mr. Taylor returning to Fengchen. The lengthy route was like a table in parts where cars could go the limit, but towards the mountains it began to become increasingly difficult. In one place miles of sand dunes were encountered but were eventually crossed after much trouble. It is noteworthy that the cars did the journey without a tyre puncture, and one had but a temporary break down.

Engineering, Financial, Commercial, and Industrial News

RAILWAYS

Proposed Railways in Mongolia.—According to the "Shun Tien Shih Pao," the Chinese Government is seriously thinking of constructing railways in Mongolia so as to bring the territory into closer connection with China Proper. The lines under contemplation are: (1) from Kalgan to Manchouli; (2) from Kueihua-Suiyuan to Kiahkta via Kulun; (3) from Sui-erh-wu-su to Altai, via Ulyasutai and Kobudo.

Locos for S.M.R. Lines.—Twenty-four locomotives and their accessories, weighing 2,100 tons and valued at several million yen, which constituted a record both in value and quantity of freight ever landed from a single steamer at the port of Fusan, Korea, was delivered there from New York early in November by the steamship *Tokiwa Maru* of the Nippon Yusen Kaisha. The locomotives were imported by the Mitsui Bussan Kaisha for the Chosen Railways and are to be used on the Peninsular railroads.

New Project in Chihli Province.—The Chihli (China) Provincial Assembly has adopted a resolution in favor of the construction of a railway from Tsangchow, on the Tientsin-Pukow railway, to Shihkiachwang, on the Peking-Hankow line, to be constructed with funds raised by the Chihli merchants and gentry. The cost is estimated at between six and ten million dollars. Influential personages are to apply to the Government for permission to build the line.

The Kyogyo Railway Company.—The "Seoul Press" states that the Kyogyo Tetsudo Kaisha, capitalized at five million yen, which has of late come into existence, was to have put 106,000 of its shares on the market during November. It is said that the company is meeting with great popularity on account of its good future prospects, and it is thought that the shares will be much oversubscribed.

Projected Peking-Jehol Line.—It is reported that the Chinese Ministry of Communications has been instructed to proceed with its plans for the construction of the proposed line from Peking to Jehol, and that officials have been appointed to make the necessary surveys of the line which will pass through Chihsien and go from Chien-an and Chi-feng directly to Jehol. A route between these two places was surveyed some years ago.

Chefoo-Weihsien Railway.—A scheme is reported to be afoot to organize a company called the Chefoo-Weishien Railway Co., Limited, with a nominal capital amounting to $18,000,000 to be subscribed for by the people.

TRAMWAYS

Electric Tramway for Tsingtao.—It is reported from Tsingtao that the authorities are drawing up plans for the construction of an electric tramway system. It will entail an outlay of about 3 million yen.

MOTORS

Automobile Traffic in Manchuria and Mongolia.—The region wherein Changchiatun and Taonan are located being a grain country, and adjoining the place where native soda is produced, busy traffic is kept up all the year round. At present, however, there is no means of communication in existence save Chinese carts. This inconvenience will soon be done away with by an automobile service which is now seriously contemplated by influential parties at Chengchiatun, Shihpingkai and Mukden. According to the plan of the promoters, says the "China Advertiser," a company called the Manchuria and Mongolia Automobile Company, Ltd., will be established, with a capital of half a million yen to operate seven motor lorries for goods and three passenger cars between Changchiatun and Taonan.

WATERWORKS

Waterworks at Wuchang.—According to the Wuchang (Hupeh Province) correspondent of the "North-China Daily News," there are rumours abroad that the waterworks scheme is to be revived. Just before the war, a syndicate was formed to supply Wuchang with water. Some of the capital was to come (if my memory serves me) from a German source. A certain amount of land was acquired and some work was put in on the digging of reservoirs, while a pumping station was to be erected on the top of the Serpent Hill. However, at the outbreak of hostilities, the supply of foreign capital was cut off, and the whole scheme collapsed, the site of one of the reservoirs being acquired by a coal company. Now it is hoped that the project will be resumed on a more secure basis, and if properly managed should prove a veritable gold mine to those willing to invest their money in it.

SHIPPING

New Japan-Korean Service.—The South Manchuria Railway Company has arranged with the Sawayama Steamship Company for the inauguration of a regular service between Fusan, Osaka, and Kobe, with a view to alleviating the congestion of goods consigned to Western Japan from Korea along the Sanyo Railway. It is said that two steamers of 1,000 tons each will be placed on the service, making six runs a month.

Agent American Bureau of Shipping.—Captain W. I. Eisler, U.S.N., has been appointed Agent and Surveyor to the American Bureau of Shipping for the territory comprising Shanghai, Ningpo, all Yangtze River ports, Tientsin, Chefoo, Newchwang, Dairen and all other North China ports where the Bureau may have business. Captain Eisler was Marine Superintendent in Shanghai of the Standard Oil Company of New York until called to Washington by the United States Navy Department.

Robert Dollar Enterprise.—The Robert Dollar Company have bought fourteen acres of waterfront in New York in connection with their freight and passenger service from New York via Panama to Shanghai, which they will operate with six vessels. They are spending a million dollars on the wharf and buildings.

Express Service to Shanghai.—The Nippon Yusen Kaisha has proposed to inaugurate an express Shanghai service with two 5,000-ton passenger liners which will be newly built, probably by April, 1921, and there is much speculation and competition between Nagasaki and Moji, as to which of the latter ports be preferred as the Japan port of the express service. The question has not yet been decided apparently, as the Communications Department is also interested in the project. Now that the Nagasaki harbor improvement scheme is expected to be materialized there is a hope of Nagasaki securing that advantage.

"Nippon Maru" Sold to Chilean Company.—The T.K.K. *Nippon Maru* has been sold to the South American Steamship Company, of Chile. The vessel will be delivered in Kobe.

M.B.K. Developing Shipping.—The Mitsui Bussan Kaisha, which besides undertaking a wide variety of business enterprises, is one of the largest shipowners in Japan, the vessels in its possession numbering 26, totalling 92,000 tons deadweight, in addition to the five ships, totalling 33,000 tons deadweight, owned by the Liaotung Kisen Kaisha which is affiliated with the company, will shortly inaugurate regular services between Dairen and Japan, on the North American run and on some other ocean lines.

N.Y.K. Dividend.—The Nippon Yusen Kaisha proposes to pay a dividend of 100 per cent. for the business term just ended. This is the highest rate ever paid by the Nippon Yusen Kaisha or by another company in Japan except a certain narikin company in Kobe which paid 500 per cent. during the war boom, says the "Japan Advertiser." The N.Y.K. dividend for the previous term was 50 per cent., consisting of 10 per cent. ordinary dividends and 40 per cent. as extra dividends. This dividend is to be paid out of a special reserve fund consisting of Y.54,949,000. It is now reported that the management of the company has decided to allot Y.30,000,000 of the special fund to the construction of new vessels, and to distribute Y.14,500,000 among the shareholders by paying a special dividend of 50 per cent. Of the remaining amount, Y.3,000,000 will be devoted to the funds for the training of seamen, and Y.5,000,000 will be distributed among the directors and employees as special bonuses, while the remaining Y.2,000,000 odd will be carried forward to the next business term.

SHIPBUILDING

Costs Rising in Japan.—The advance in prices of commodities and in wages has considerably increased the cost of shipbuilding in Japan. At present the leading shipyards have their hands full with ships to be built for America and vessels ordered by Japanese. These ships will not be completed until the latter part of next year. It is understood, says the "Japan Advertiser," that these orders were accepted at prices ranging from Y.350 to Y.400 per ton but during the last six months shipbuilding materials have advanced in price by from 20 to 30 per cent. For instance, what was quoted at Y.200 six months ago is now valued at between Y.240 and Y.250. In addition, wages have increased by from 30 to 60 per cent. It is estimated that the shipbuilding cost has

Electrical Enterprises in Japan.—According to investigations made by the Japanese Department of Communications, says the "Japan Chronicle," the number of electric companies in Japan at the end of September stood at 745, capitalized at Y.837,895,527. Of these the companies supplying power or light alone numbered 653, capitalized at Y.440,061,559 and those running traffic business aggregated 42 with a capital of Y.500,329,470. As regards the companies carrying on the two businesses combined, they stood at 50 in number and Y.336,964,997 in capital.

Hydro-Electricity in Shikoku.—It is reported from Shikoku, Japan, that about a dozen leading business men of Shikoku are interested in a scheme for the promotion of a hydro-electric company to be called the Yoshinogawa Suiryoku Denki Kaisha. The name is derived from the fact that the company is going to utilize the water of the Yoshinogawa, running through the centre of the island, from which about 14,000 horse-power of current is expected to be produced. The capital is fixed at Y.10,000,000

Tokyo Co. Expanding.—The Tokyo Electric Light Company has decided to erect another power station on the river Sagami which when completed will bring up the total supply of power by the company to Tokyo to more than 10,000 kilowatts.

Shortage of Electric Power in Osaka.—Industrial companies in Osaka are threatened with a cessation of the supply of power at night, for the Osaka Electric Light Company announces that it cannot supply night power until further notice.

Hydro-Electricity Along the Yalu.—It is reported that a plan has recently been formed by Japanese capitalists to establish a hydro-electric company in South Hamkyorgdo. According to the report received, the company will be capitalized at ten million yen. The company will dig a canal, 3,200 yards in length, from a point on a tributary of the Yalu, to the River Namtai, thus causing a fall of 1,450 feet, with a generating capacity of forty thousand horse-power. The promoters are ready to start the company, as soon as official permission for establishment has been secured.

MINING

Light Railway for Shantung Mines.—The construction of a light railway to connect the coal mines at Tsuwen with Mingshai (Shantung) for the distance of 30 *li*, is now being carried out, says the "China Advertiser." It is said that the cost of construction is estimated at $120,000. When the line is completed, 40 coal trucks and 2 passenger cars will be operated twice a day from each terminus. The mine is reported to produce very good coal, a day's output amounting to over 1,000 tons.

Mineral Resources of Kwantung Leased Territory.—According to the report of the Dairen Civil Administration Office, the mining assets within the district under its jurisdiction are meagre. In 1918 the total output of asbestos was three tons, valued at Yen 225; the total output of lime was 1,439 tons valued at Yen 10,878; and that of iron was 48 tons worth Yen 480, making the total of 5,490 tons with the total value of Yen 11,583. There are still many unworked mines.

Anshanchan Iron Works.—According to the latest statistics published, the number of clerks employed at the Anshanchan Iron works totals 176 and amount of salaries and allowances comes up to a little less than Y.25,000 per month. 1,276 Japanese and 1,387 Chinese workmen are employed, to whom the Company is paying something like Y.3,218, more or less, a day.

Output of Iron in China.—According to investigations recently made, the amount of iron manufactured in China by modern processes totals four million tons a year, whereas three million tons are made under the old method, says the "China Advertiser." The following shows the estimated amount of iron ore at various mines in the Republic :—

(Unit : 1,000 tons.)

Mines	Estimated Amount of Ore Deposit.
Anshantien (Manchuria)	158,000 tons.
Penhsihu (Manchuria)	80,000 ,,
Chinlingchen (Shantung) ...	...10-30,000 ,,
Fenghuanshan (Kiangsu)	30,000 ,,
Taochung (Anhui)	...15-50,000 ,,
Takushan, Hsiaokushan (Anhui)	13,710 ,,
Tangliangshan (Anhui)	3,000 ,,
Ankingshan (Anhui)	60,000 ,,
Taipingshan (Anhui)	250 ,,
Tayeh (Hupeh)	43,000 ,,
Aocheng (Hupeh)	3,948 ,,
Chizushan (Hupeh) except 9 others...	17,150 ,,
9 Other mines (Hupeh)	9,740 ,,
Chengmenshan (Kiansi)	6,000 ,,
Ansi (Fukien)	100,000 ,,
Pantien (Fukien)	29,190 ,,

Reported Coal Ventures in China.—If the "Asahi" (Japan) is to be credited, says "Japan Chronicle," both British and American capitalists are now directing their earnest attention to the matter of investments in the Chinese mining industry. British eyes are said to be specially fixed upon coal mines. According to the "Asahi's" calculation, the coal output in Britain for this year is expected to witness a falling-off of about 10,000,000 tons, with deterioration in quality into the bargain. These considerations have caused British capitalists to consider the exploitation of coal mines in Hunan, Hupeh and Shantung provinces. Inasmuch, however, as means of transport in China are defective, a quick launching of their schemes in real earnest is considered out of the question. In the meanwhile, they are said to be making efforts to gain mining concessions in those territories. As for America, as a result of personal observations by Mr. Samuel Hill, a Director of the American Great Northern Railway Company, in China, in November last, some plan has been formed, and this gentleman, in consultation with Mr. Charles Schwab, has recently approached some influential Chinese and arranged for the acquisition of mining rights in Hupeh province. The Americans concerned in this scheme are reported to have some other projects of a similar nature in view for other districts.

New Coal Ventures in Japan.—Immediately following the announcement of a new coal-mining venture in Saghalien, another colliery project is reported in Yamaguchi Prefecture, Japan, where a group of local influential business men are hard at work for the flotation of a coal-mining company under the name of the Kamiokinoyama Tanko Kaisha, with a capital of Y.3,500,000. It is said that they have bought up an extensive tract of promising seams covering 2,000,000 *tsubo* approximately, in Ube in the same Prefecture. The "Japan Chronicle" is given to understand that the capital will be divided into 70,000 shares of which 5,000 to 7,000 shares are expected to be put on the market for public subscription.

CONSTRUCTION

Building Society for Penang.—A co-operative building society has been started in Penang. The object is to acquire land and provide dwellings for members which would become by an easy method of payment their own property.

O.S.K. Building at Kobe.—The Osaka Shosen Kaisha has decided to build its branch office buildings in a site recently secured by the company next to the Oriental Hotel in Kobe. It will be of reinforced steel, and will have seven stories, which will be higher than any other building in the city. Its basement and first and second floors will be used by the company while rooms on other floors will be rented. Construction work was to be started in November and be finished in two years at a cost of Y.1,000,000.

AGRICULTURE

Sino-Japanese Pasture in Manchuria.—The project of the Okura Gumi to create a big pasture under Sino-Japanese joint management at Chengchiatun is about to materialise. Baron Okura, representing the Japanese company, and General Chang, the Tuchun of Fengtien province, met on November 6 and the contract was signed between them on the occasion. The undertaking is capitalized at Y.6,000,000. The opening of markets at several places in East Mongolia is said to be contemplated by the same capitalists.

Hangchow Ramie Fibre.—Ramie produced in Hangchow District, especially at Chienchiao, Chiaochow, Linping, as well as in Kasing and Huchow Districts is designated by the natives as green, blue and yellow ramie. The total amount produced annually in these regions is estimated at 60,000 piculs, which are brought to Shanghai and shipped to Japan and other countries. The price of course varies from time to time, but at the place of production something like $6 per picul is thought to be normal.

Liquorice Produced in Mongolia.—The price of liquorice, the most important article produced in Mongolia, is, roughly speaking, wholesaled at Y.15 per 100 catties at Chengchiatun; Y20 at Mukden, Y.15 at Seoul and Y.30-35 at Osaka. At the place of production, however, it is "dirt" cheap, it being procurable at 2½-4 sen per catty or Y2.50-4.00 per 100 catties, nearly one-tenth of the price commanded at Osaka, the cost of transportation making it dearer the further it is carried away. The Mongolians know how to dig the liquorice, but do not know how to cultivate it, say the "China Advertiser." So the regions near Chengchiatun, where digging can be carried on with comparative ease, have all been denuded of the herb, and the natives are pushing further and further into the interior. But when they proceed too far northwest, it will not pay them to bring out the product, for the cost of transportation will come up higher than the market price at Chengchiatun.

FINANCIAL

Japan's Budget for 1920.—The total of the Japanese Budget for 1920 is Y.1,264,930,000, which exceeds the previous year's by Y.200,840,000. Expenditure is roughly as follows :—

Imperial Household Y.4,500,000; Foreign Office Y.11,000,000; Home Office Y.100,830,000; Financial Office Y.174,740,000; Army Office Y.375,730,000; Navy Office Y.308,940,000; Judiciary Office Y.31,710.000; Educational Office Y.41,300,000; Agricultural and Commercial Office Y.51,290,000; Communication Office Y.174,840,000.

New Chinese Bank.—The Oversea-Chinese Bank, Ld., was successfully inaugurated in Battery Road, Singapore, on October 1. The capital is $20,000,000 in shares of $100 each, the issue to the public being 60,000 shares. The original subscribers are, according to the "Malaya Tribune," mostly well-known Chinese citizens of Singapore.

Volume XVI

January 1920

Proposed Railway Routes into Szechuan Long editorial discussing the Merits of the two sole possible lines. About 25 photographs of the scenery the lines would pass by and 1 sketch map with proposed routes.

The Railways of China A list of railways and mileage figures of the various lines making up china's 6,836 miles of railway. Includes a sketch map of the various railways existing and contracted for.

Railway Progress in China in 1919 A report summarising how the previous year had shown advancing earnings and many administrative improvements. Includes a large coloured map of Chinese Government Railways.

Peking-Urga Railway Project Revived Reports were circulating that the Peking-Suiyuan railway would extend the line into Mongolia.

Railway System with Shanghai as Terminal At a meeting of the Engineering Society of China H von Heidenetam, Engineer-in-chief of the Whangpoo Conservancy Board, had presented a paper discussing how Shanghai could become China's center of commerce and industry
commercial metropolis.

Lunghai Loan the Government was still negotiating with Belgium for a loan for this line.

Taoching Railway Extension A loan was being negotiated for this extension.

South China Railway Scheme The Canton military government was planning a new Bureau to oversee the railways of the S.W provinces.

Purchase of Rolling Stock A $2 million loan had been arranged for the purchase of rolling stock for the Canton-Hunan section of the Kin-Han Railway.

Ningpo Railway After a long delay, work was likely to progress again on the Shanghai-Hangchow line extension to Ningpo.

Chinese Eastern Railway Representative. Dr C. C. Wang had been appointed replacement Chinese representative of the C.E.R.

Freight rates on the Chinese Eastern Railway It had been decided to base freight rates on the Gold Standard.

General Hsu Shu-tseng (Little Hsu) had proposed issuing a loan for the extension of the Peking-Suiyuan Railway to Urga.

Hankow-Szechuan Railway. A $1 million loan had been signed with a British syndicate.

February 1920

Reclamation in Hongkong an illustrated article describing the reclamation of an area of land in Kowloon Bay to create a new site for housing. To facilitate the land fill a temporary railway had been laid.

Investment Assets of Chinese Government Railways A table of assets of the railways.

Employees on China's Railways One paragraph outlining the numbers of employees on Chinese railways.

Rolling Stock on China's Railways Summary of the total numbers of locomotives, carriages and goods wagons.

The Changchow-Amoy Railway The line was to be extended beyond Changchow.

The Kiangsi-Kuangtung Railway Japanese interests were planning to construct this line if the Chinese government failed to get the scheme started.

Changsha-Changteh Project The government was contemplating building this line.

Japan and the Chinese Eastern Railway Japan was scheming to get Chinese troops guarding the C.E.R replaced by Russian troops for their ends.
Projected Kalgan and Kiakta Railway Extension of Yueh-Han Railway
The South Western Provinces' Railway Scheme The Canton military government was still pressuring the S.W provincial authorities to build railways quickly.

April 1920
Port and Railway Schemes for South China - Dr. Sun Yat Sen's Third Program for the International Development of China. A further extract from Sun's extensive port and railway developments plans.
Projected Railway to Serve Tsingtao The government intended to build a railway connecting Shihchiachuang on the Peking-Hankow line with Tehchow on the Tientsin-Pukow railway, a distance of 350 li. This would facilitate communication, not only between the two lines, but with the Grand Canal.
Chinese Railway Technics Commission The first session of the Preliminary Engineering Conference of the Commission on Railway Technics had been held February 14 at the Ministry the of Communications in Peking. A list of attendees is included.
Chinese Eastern Railway Control A discussion about the bickering going on over control of the C.E.R. China's sovereignty and use of Chinese troops as railway guards.
Swatow-Chaochowiu Line The line was operating at a loss. Also mention of another push-car line of 10 miles between Swatow and Changlin.
Chlnchow-Jehol Project The Government had reportedly decided to construct a railway from Chinchow to Jehol in connection with the construction of Hulutao port.
Japan Takes Advantage of Railway Situation Japan was muscling in on railway schemes in Manchuria because of the chaotic situation deriving from the Russian revolution.
Tientsln-Pukow Tickets The Tientsin-Pukow Line of the Chinese Government Railways was issuing periodical tickets of one, three, six and 12 months.
South Manchuria Railway Company The company was to increase the capital issued.
Living Buddha Supports Kalgan-Kiakbta Railway The leader had telegrammed Peking supporting the proposed railway
Pukow-Sinyang Railway Scheme The government hoped to resurrect the stalled construction.
American Locomotive Company Gets Orders. 7 locomotives ordered for the Shantung Railway & 4 for Taiwan.
Baldwin Gets Chinese Order The U.S company had received an order for 12 locomotives.
Amoy-Changchow Line. The planned extension had stalled owing to the railway operating at a loss. It was also poorly maintained.
Siansing-Siaoshan Railway A survey was being conducted for this line as a branch of the Shanghai-Hangchow-Ningpo Railway.

May 1920
The Baldwin Locomotive Works - Locomotives Recently Built for Service in China. During 1919, the Baldwin Locomotive Works had built 62 locomotives for shipment to China. 5 photos with descriptions.
New Power for the Tientsin-Pukow Line Two photos of ALCO locomotives build for the Shantung and Tien-Pu railways.
Survey Kalgan-Kiatkta Railway A survey party had been organized for the proposed Kalgan-Kiatkta railway.

South Manchuria Company: The company was hoping to increase capital by Yen 140 million.
Extension of Tao Ching Railway Granted An application of the Peking Syndicate to extend the Taokow-Tsinghua Railway to Huaiking in Honan had been granted by the Department of Communications.
Chinchow-Jehol Railway The government had decided to construct a railway from Chinchow to Jehol in connection with the development of Hulutao Port
Loan for the Lung-Hai Railway. Reported that Mr. Sze Shu-Tsen, Managing Director of the Lung-Hai Railway, had succeeded in negotiating a loan of Francs 25 million to continue construction work.
To Represent China The Ministry of Communications had instructed Mr. Foley and Mr. Hsueh Hsi to participate in a forthcoming railway traffic conference at Tokio.
Mlngshu- Changchiu Light Railway Construction of a light railway between Mingshui and Changchiu for coal transportation had been started.
Amoy-Changchow Railway. The Ministry of Communications had decided to initiate construction of this line but there were still loan difficulties as well as occupation of part of the line by Southern troops.
Horvath Advisor to China. General Horvath had been appointed by the Chinese Government as advisor in connection with the affairs of the C.E.R.
Chinese Eastern Directorship. Mr. Wang Ching-chuan had been appointed Associate Director to the Russian Resident Director of the Chinese Eastern Railway in succession of General Horvath.

June 1920
Port and Railway Schemes for South China Sun Yat Sen's Third Program for the International Development of China - Continued from April Issue.
New Line Projected from Sunning City to Hoi An City A wealthy Cantonese from the Straights Settlements had proposed a branch line to Hoi An. (Perhaps 海安 on the peninsula opposite Hainan or place near Macau)
Proposal to Have Russian Financiers Superseded by Japanese in Ping Hei Railway Loan. The Japanese had suggested taking over previous Russian loan agreements for this line but there were objections.
Dr. C. C. Wang Takes Over Management of Chinese Eastern Railway The former director of the Peking-Hankow line had assumed his duty as Chinese resident manager of the Chinese Eastern Railway.
Chinese Financiers Urge Redemption of Railways Under Foreign Control. Liang Shih-yi and the Chinese financiers connected with his Five Families Bank, the strongest native banking group in North China had urged the Government to redeem all national railway lines still under partial foreign control.
Chinese Protest Against Proposed Mine Railway The provincial assembly of Shansi had sent a despatch to the civil governor objecting to granting the Peking Syndicate the right of building a railway from Chinghua in Honan to Tsechow in Shansi for the development and transportation of iron and coal minerals.

July 1920
General Demetrius Horvath, A brief account of the background and career of the former Chinese Eastern Railway's Chief engineer and General Manager, recently appointed as a foreign adviser to the Chinese government. 1 portrait.
South Manchurian Railway Co.'s Good Report The company's previous year had been their most successful.

Lung Hai Railway Loan Protest, Natives of Kansu and Shensi residing in Peking had held a meeting to discuss means for the immediate construction of the Lung-Chin-Yu-Hai Railway.

August 1920

Paul Painleve Planning Unification of Chinese Railways The former French premier was in the Chinese capital as the guest of President Hsu and was directing plans for the unification of Chinese national railways.

The Fushun Colliery and Power Plants of the South Manchurian Railway A richly illustrated description of the SMR's electric-powered railway operations at their Fushun colliery. 11 photographs and illustrations.

Canton-Hankow Railway The Canton military government had promised that the forced contribution of $30,000per month from the Kwangtung section of the Canton-Hankow Railway would be repaid.

S. M. R. Earnings Financial report of earnings for the past year.

September 1920

Proposed Nanchang-Shaochow Rallway Local promoters were aiming to construct this line for $6 million.

S.M.R. Freight Returns Figures for the previous six months.

October 1920

Prairie Type Locomotives for the Kin-Han Railway A description of new 2-6-2 locomotives built by the U.S. Lima works for the Peking-Hankow Railway. One drawing and a list of specifications.

A Chinese Plan for Chinese Railway Development - Dr. Sun Yat-sen's Fourth Program for the International Development of China. This 4th Part includes his plans for new railway lines.

West China Railway Projects The minister of communications had instructed the Chinese director of the Canton-Hankow-Szechuan Railway to consider whether the Sinyangchow-Chengtu and Tatungfu-Chengtu lines should be joined up with the Hankow-Szechuan line.

Chinese Railway Standardization The third session of the commission considering plans for the standardization of Chinese Government railways had been was held in 13-17 September.

Chinese Railway Costs and Accounts Chinese minister of communications, Mr. Yeh Kung-cho had directed a review of all railway accounts to ensure that standards were keeping up to date.

New Central Station, Peking Mr. Yeh Kung-cho was resolved to carry out his old scheme of constructing a Central Station at Peking for the Peking-Mukden, the Peking-Hankow and the Peking Suiyang railways.

Peking Sulyuan R. R. Extension The Railway Board had decided to build an extension to the Suiyuan railway and was raising funds by means of domestic bonds, and not by seeking a foreign loan.

Kowloon-Canton Earnings Figures for the year 1919.

Tientsin-Pukow Railway The railway was to construct a train ferry at Pukow at an estimated the cost of $3,500,000.

American Locomotives for China 62 locomotives had been built for shipment to China the previous year.

S.M.R Extensions The President of the SMR had announced that the required increase in capital would be taken up equally by the government and the public.

November 1920

Daylight in Manchuria An editorial by the Publisher, George Bronson Rea complaining that USA had not been permitted to compete fairly in China's railway construction with the exception of the South Manchuria Railway, which was purchasing millions of dollars' worth of modern engineering products. Multiple photos of modern American machinery in use at the Fushun colliery & the company's locomotive and carriage works at Shakako. 30-plus photos and 2 sketch maps.

China's Effort to Recover Control Over the Chinese Eastern Railway A report explaining how Dr C.C. Wang and the Chinese government had been working to regain a "fair" degree of control over the C.E.R.

A Chinese Plan for Chinese Railway Development - Dr. Sun Yat-sen's Fourth Program for the International Development of China (Continued from October, 1920 edition).

Plant for the Canton-Hankow Line The Canton-Hankow railway had ordered locomotives (eight for freight and four for passengers.

South Manchurian Railway Depression Reports published in Japanese papers stated the S.M.R. Company anticipated a decrease of at least 20% in revenues as a result of the depression.

Canton-Hankow Railway Loan The Chinese government aimed to raise the necessary funds to construct the Chuchow-Hengchow section on the Canton-Hankow Railway for a distance of 48 miles.

To Start Construction of New Lines, Peking Kong Shih-to, a member of the House of Representatives had decided to construct the Tsangchow railway as a means of providing constructive employment to sufferers from the famine.

Peking-Suiyuan Loan A short term loan had been arranged for the Cho-Tze section

December 1920

The Peking Syndicate's New Railway Agreement A Reuters report that the company has been granted the right to extend their railway line.

A Mandate had been issued on November 24, sanctioning the agreement between the Chiaotungpu and Peking Syndicate for the construction of the Chinghua-Menghsien branch of the Chinghua-Taokow Railway in Honan.

Chefoo-Weihsien Line The ministry of communications had donated 150,000 yuan for the construction of the Chefoo-Weihsien line.

Start Work on Lunghai Line Belgian engineers had arrived at Haichow to commence the completion of the Lunghai railway.

South Manchuria Railway The condition of the company had improved following the issue of more debentures.

Chinese War Lords to " Protect " Railways? After negotiation, Generals Tsao Kun and Chang Tso-lin had decided to divide between themselves the responsibility of "protecting" the various northern Chinese railway lines.

Kin-Han Buys Sleepers from Mitsui Bussan Kaisha. The Peking-Hankow railway board had ordered 100,000 sleepers from this company.

Shimonoseki-Moji Submarine Railway Tunnel.

Contract Signed for Tsing-Man Railway A loan contract with the Peking Syndicate for the purchase of 200 freight cars for use on the Tsing-Man railway had been signed by the Chinese ministers of communication and finance.

Shareholders' Meeting of C.E.R. Shareholders had held a meeting to agree on how to handle small shareholders interests.

Advert for the S.M.R.'s Shakako Railway Workshops

Advert for the S.M.R.'s Coal and Steel Works

The Far Eastern Review

ENGINEERING FINANCE COMMERCE.

VOL. XVI SHANGHAI, JANUARY, 1920 No. 1

Proposed Railway Routes into Szechuan

A Discussion of the Merits of the Two Sole Possible Lines

ONE of the greatest and most important tasks that the Chinese Government has before it is to provide proper and adequate railroad facilities for the young Republic of China. With an area larger than the area of the United States of America and a population over three times as great China to-day has only 6,836 miles of railway including both Government and concession railways, as compared with more than 250,000 miles of railroad in the United States. Although more than 10,000 miles of railway are now projected, or proposed, in China, there is very little or no actual construction work under way. But it seems certain that in the very near future work will be resumed upon a large scale and that the next decade may see more railways constructed in China than in any other country in the world.

One of the most important railway propositions in China to-day and one of the most interesting railway engineering problems in the world is that of building a line into the great

Showing one of the cliffs of the Lungmen Gorge on the Upper Yangtze

Province of Szechuan. Such a line would serve one of the richest, most populous, and productive provinces in all of China and would open up a veritable empire containing more than 218,500 square miles, an area larger than France, or Germany before the war, and almost one and one-half times as large as Japan.

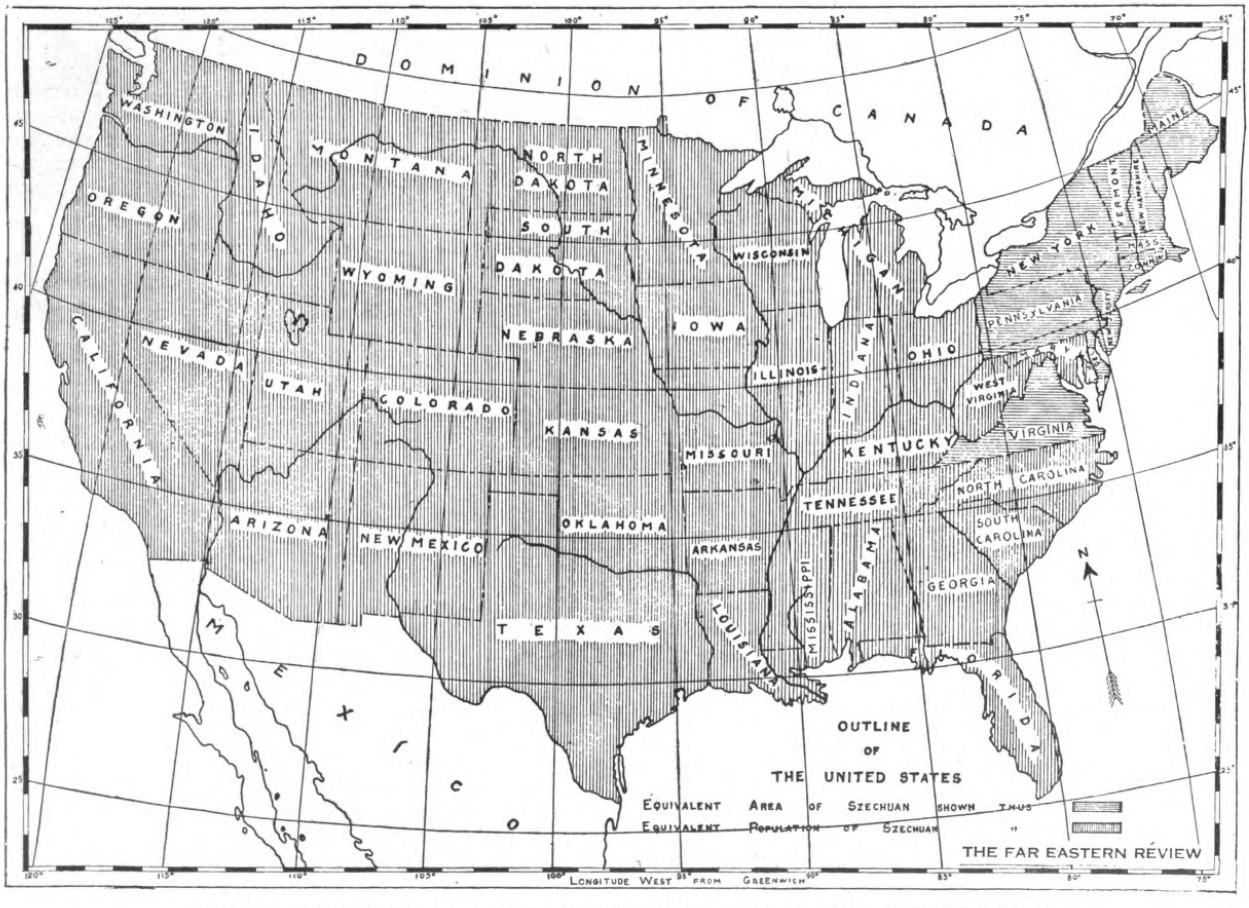
In comparison with the United States of America, the *area* of the Province of Szechuan is *larger* than the *combined area* of the eleven States of Maine, New Hampshire, Vermont, Rhode Island, Connecticut, Massachusetts, New York, New Jersey, Pennsylvania, Delaware, and Virginia, while its *population* is but one-fifth less than the *total population of the entire United States of America*, and is *greater* than the *combined population of all of the other thirty-seven States of the U.S.A. not mentioned above.* The accompanying map of the United States of America shows the equivalent area of the Province of Szechuan and the portion of the United States containing a total population equivalent to that of Szechuan.

Two routes have been surveyed for railroads into the Province of Szechuan, with a view to connecting Chengtu, the Capital of the Province, with the present operated railways of the Chinese Government. The first of these routes, the projected Szechuan-Hankow Line, begins at Hankow, and, proceeding westerly follows up the mighty Yangtze River, passing through the difficult gorges of the Yangtze to Chungking, thence northwesterly to Chengtu, a total distance of 939 miles. This route was surveyed by various foreign engineers under the Hukuang Line contract. For the sake of clearness in the following discussion, this route will be called the Yangtze River Route.

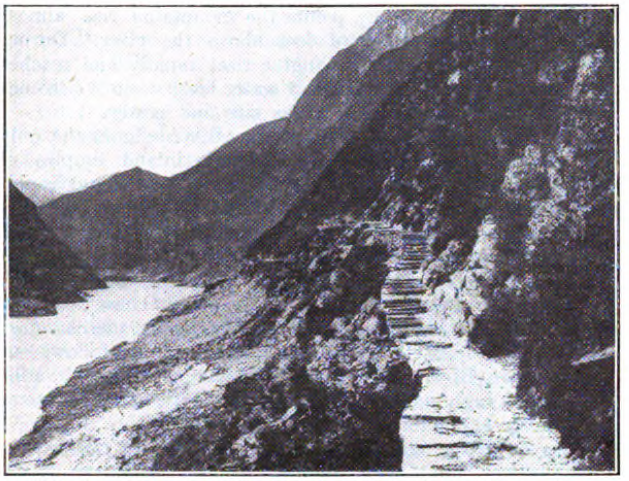
The new route into Szechuan, surveyed by American engineers under the contract between the Chinese Government and the Siems-Carey Railway and Canal Company, connects with the present-operated Peking-Hankow Line at Sinyangchow, a point 131 miles north of Hankow, and proceeding in a general north-westerly direction follows up the drainage of the Han River to a point called Tzeyang where the course turns southwesterly and crossing the Main Divide between Szechuan and Shensi enters the rich Province of Szechuan and after passing several large cities and many smaller towns and villages reaches Chengtu, its western terminus. The total length of this line is 895 miles. This route we will call the Han River Route, for the sake of convenience, in the comparison which follows.

In the FAR EASTERN REVIEW of July, 1918, the proposed new Han River Route into the Province of Szechuan was discussed in considerable detail. However, at that time, complete data relative to these surveys were not available, and it was, therefore, impossible then to compare this route with the Yangtze River Route with a view to determining which would best serve the needs of the country.

Now that more complete information is available regarding the surveys of the Han River Route, and particularly the surveys of that portion of the line across the Main Divide, it is of interest to consider the relative advantages

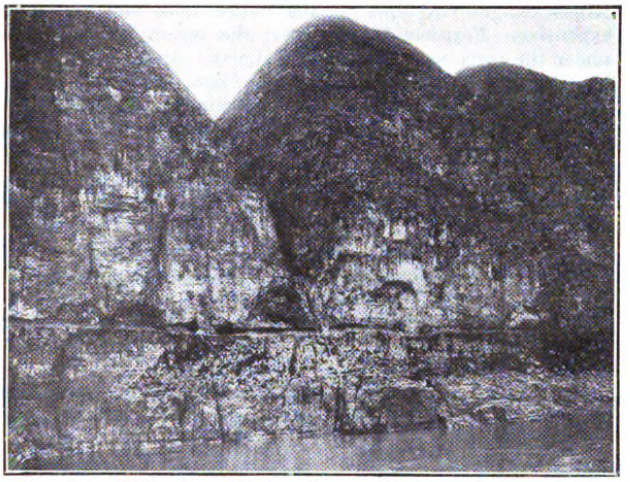


Map showing how the population and the area of Szechuan compare with those of the United States



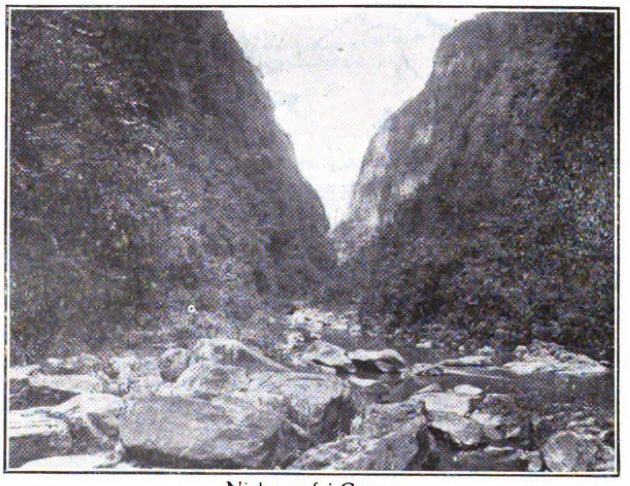
Windbox Gorge, near Kweichowfu. Note the path for trackers of junks

The Lungmen Gorge

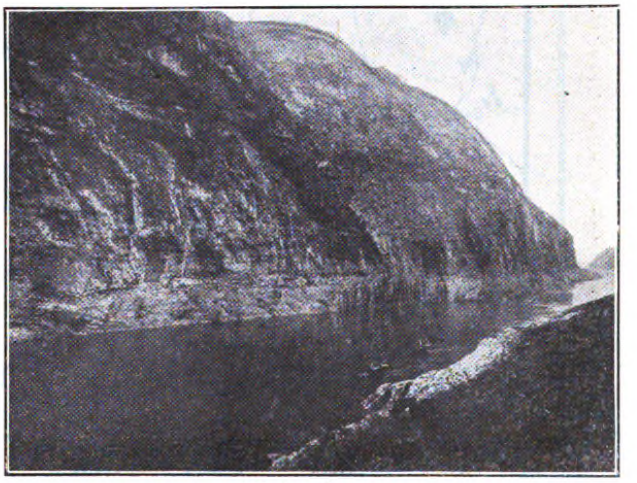


One of the Walls of the Wushan Gorge. Note pathway for trackers carved out of the solid rock

The Sanshi Gorge on the boundary line between the Provinces of Hupeh and Szechuan



Niukaumafai Gorge



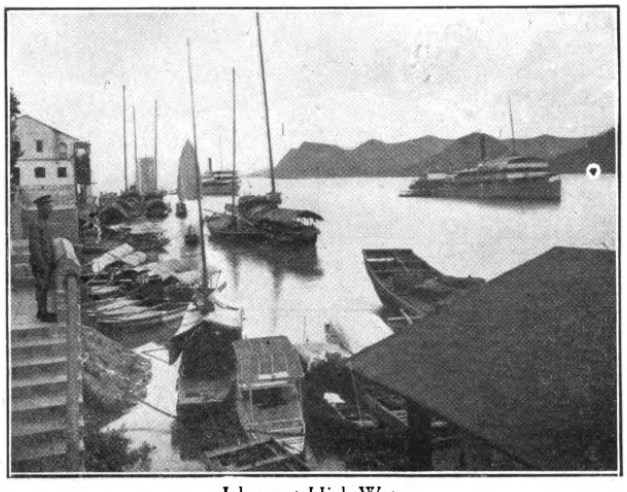
Wushan Gorge

Views showing the difficult country in the Yangtze Gorges

and disadvantages of this route as compared with the Yangtze River Route, and particularly in view of the statements made in recent articles appearing in a contemporary publication concerning the Yangtze River Route.

The Yangtze River Route

Szechuan has often been described as a bottle, of which the Yangtze River is the neck—and the only means of ingress and egress. Surrounded on all sides by mountain



Ichang at High Water

ranges, Szechuan is indeed an inaccessible province. On the east the Yangtze River has cut its way out through the solid rock in a series of great gorges which for grandeur of scenery surpass anything in China and rival many of the scenic routes of the world. In its course to the sea, the Yangtze passes through these gorges for a distance of more than one hundred miles. At many points the mountains rise almost perpendicularly hundreds of feet above the river. During the high water season the Yangtze rises rapidly and reaches a height of 175 feet above its low water level when it becomes a veritable cataract of stupendous size and power.

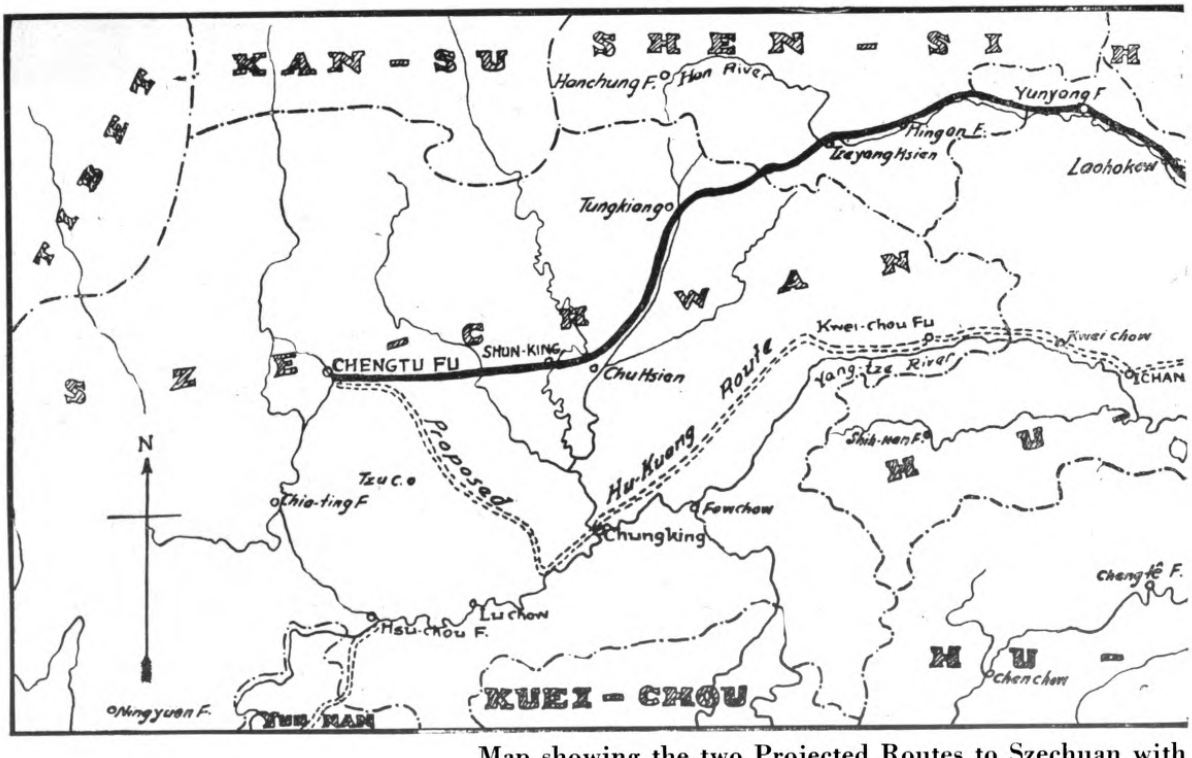
At the present time the Yangtze River affords the only means of transportation for the immense inland empire of Szechuan, but the numerous shoals, whirlpools and rapids in this river make navigation exceedingly dangerous and only certain kinds of small river craft undertake the trip through the gorges on account of the great hazards and perils involved. The history of navigation on the Upper Yangtze is filled with tragedy for this great stream has taken an awful toll of human lives as well as of boats and merchandise.

The survey of the Szechuan-Hankow Line follows up the Yangtze River and through the gorges at an elevation safe above high water. This, however, necessitates some very heavy and difficult construction.

As originally surveyed, it was proposed to construct a great tunnel, more than three miles in length—or 17,000 feet, to be exact—at a point on the Yangtze River called Nanto. This long tunnel as originally planned would be the largest single structure on the entire line, and the most expensive. Fortunately, however, the recent surveys made under the direction of Mr. C. J. Carroll, the present Chief Engineer of the Szechuan-Hankow Line, show conclusively that the big Nanto tunnel may be eliminated entirely and a more favorable and less expensive line obtained by following the general course of the river.

Comparison of the original tunnel route with the revised river route shows that the river route is far better, because :—

(1) It reduces the length of line by 3,975 feet.
(2) It reduces the maximum curve from 8 degrees to 6 degrees.
(3) It reduces the total curvature by 1,029 degrees 58 minutes.



Map showing the two Projected Routes to Szechuan with

(4) It reduces the maximum grade from 1.25 per cent. to 0.317.
(5) It reduces the rise and fall by 767 feet.
(6) It effects a saving of $2,585,000 on construction of sub-grade alone and a total saving of $3,226,000 on all items to be taken into consideration.

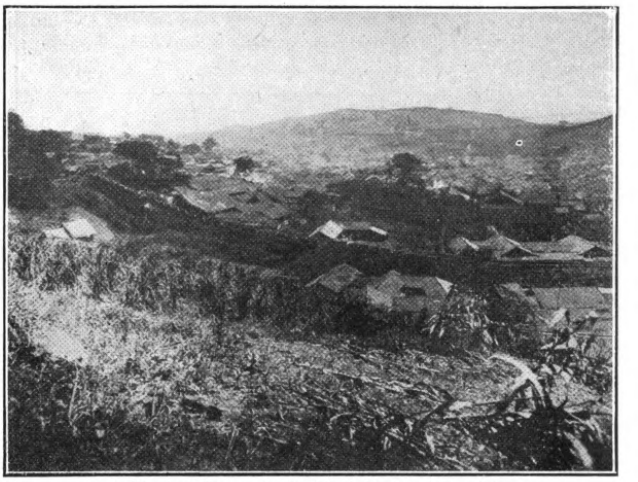
After leaving Nanto the route of the Szechuan-Hankow Line follows on up the Yangtze River to a point above Chungking, where it turns sharply to the northwest and leaving the Yangtze River proceeds cross-country to Chengtu.

The accompanying photographs of views taken along the Yangtze River Route give a far better idea of the character of the country and the general conditions than any mere written description could possibly give. These views serve to make more clear the enormous difficulties that would be encountered on this route and the great natural obstacles which bar the way. Not that this route is considered impossible, for it is not; all the physical obstacles can be overcome, but it is a question of choosing the route which will best serve the country, taking into account the various factors which enter into the consideration of the subject.

Few, if any, more difficult surveys have ever been carried out than the surveys of the Szechuan-Hankow Line through the gorges of the Yangtze, and great credit is due the Engineers for the resourcefulness and ability shown in the performance of their work under most trying and most difficult conditions, for more than one life has been lost in carrying out these surveys.

The Han River Route

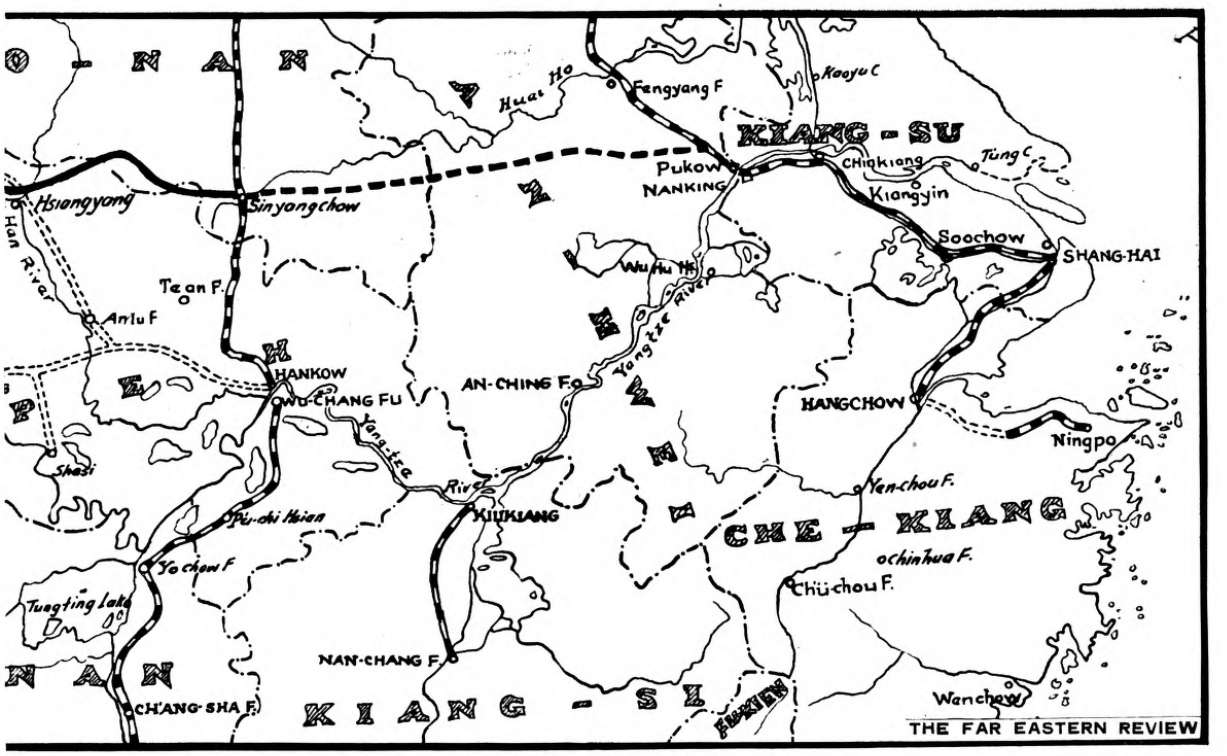
The idea of reaching Szechuan by the Han River Route is not new; on the contrary it is said that this route was first selected, but after a preliminary examination in which no suitable pass was found in the Main Divide which separates Szechuan from Shensi it was decided to attempt to enter Szechuan through "the neck of the bottle"—that is, via the Yangtze River Route. But notwithstanding the previous adverse reports on the Han River Route, the American engineers decided upon a thorough, careful, reconnaissance of the entire country, to ascertain if a satisfactory line could be obtained via this route, although



A Typical Town in the Red Basin of Szechuan

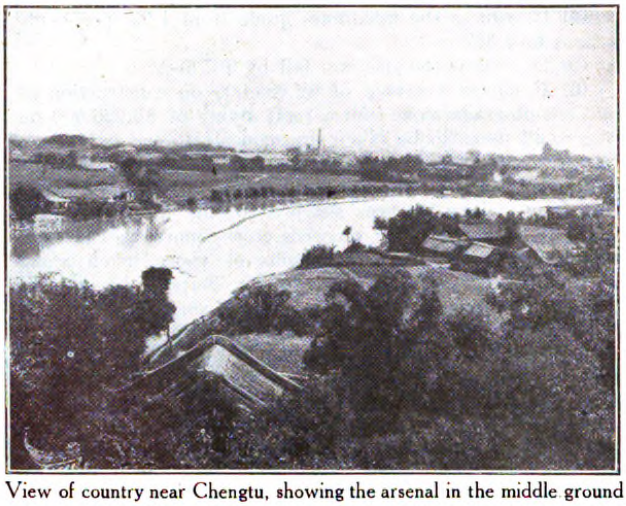
reconnaissance surveys aggregating 4,000 miles were made over this route and the wisdom of this course of action was justified by the finding of a suitable crossing of the Main Divide and by obtaining a very satisfactory route for a railroad through the most difficult part of the country.

While there are rough, rugged, sections of heavy country traversed by the Han River Route these do not compare with the similar sections of the Yangtze River Route where the natural obstacles, difficulties, and hazards are far greater and more serious.

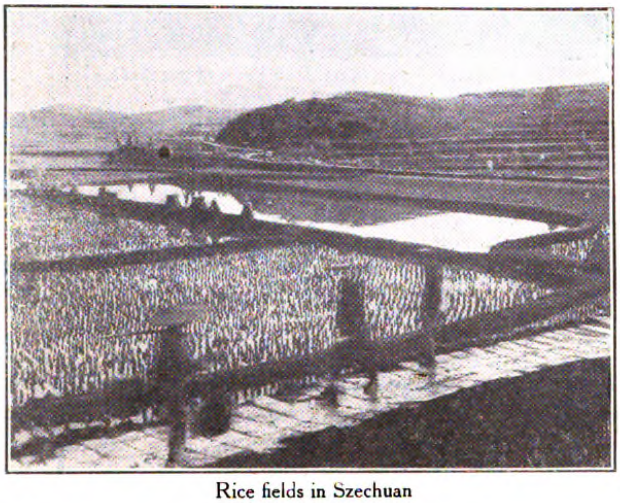


emphasis upon the possible Direct Line from Shanghai

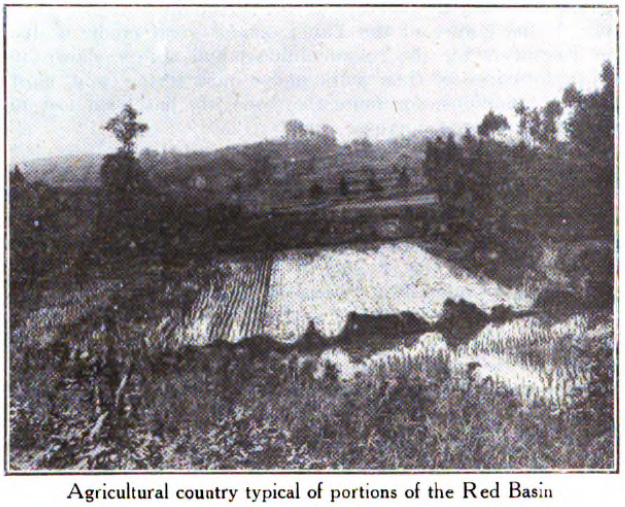
Cultivated fields on the Luho river, Szechuan



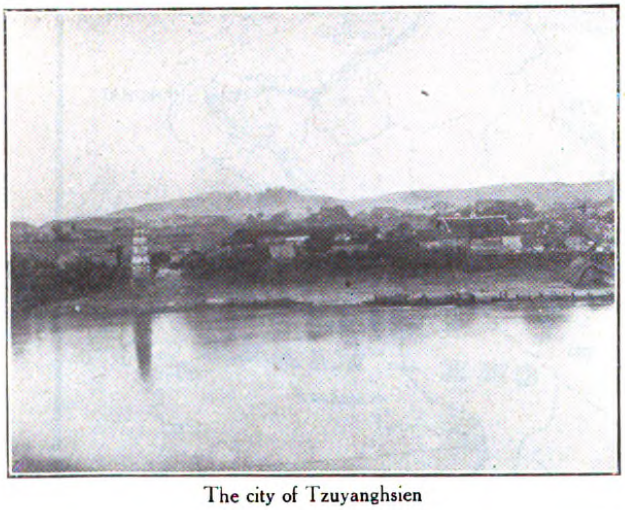
View of country near Chengtu, showing the arsenal in the middle ground



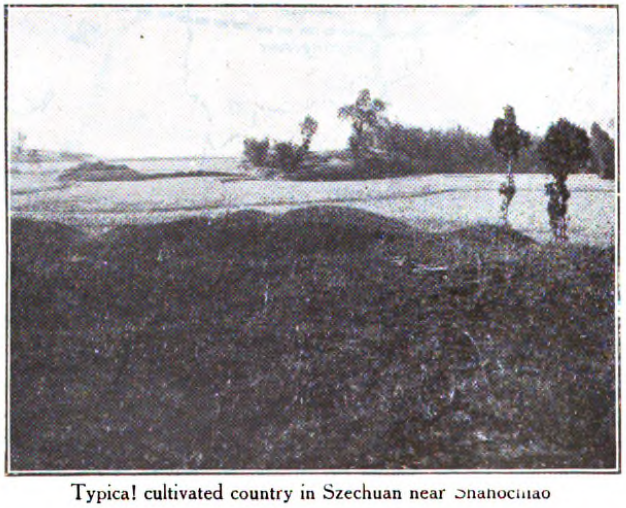
Rice fields in Szechuan



Agricultural country typical of portions of the Red Basin



The city of Tzuyanghsien



Typical cultivated country in Szechuan near Shanochiao

Views of typical Szechuan country through which any railway must pass

It should, however, be borne in mind that there is no royal road to Szechuan—there is no primrose path into this great inland empire. If there were it would long ago have been occupied by a main trunk railway which would to-day be busily engaged in transporting the enormous commerce of the vast province.

The accompanying photographs of views along the Han River Route illustrate only the worst part of the country, others of a general character were published by us in July, 1918. There are also submitted views of Szechuan—the " Promised Land " of China, as it might be called—a land of fertile fields and many harvests rich in agricultural, mineral and other resources. These views are intended to give an idea of the various sections of country which the proposed railroad would serve, and they are typical. They do not represent small isolated spots, they represent the largest and most extensively cultivated area of agricultural land in all of China.

Comparison of Yangtze River Route with Han River Route

In the following comparison of routes the figures given of the Yangtze River Route refer to the revised location made by Mr. C. J. Carroll, Chief Engineer, eliminating the Nanto Tunnel and effecting a saving of over $3,000,000 in construction cost, to which reference has already been made.

The Yangtze River Route is 938.8 miles in length, while the Han River Route is 895.5 miles long, or 43.3 miles shorter than the Yangtze River Route. The maximum gradient of the Yangtze River Route is 1.98 per cent. as against 1 per cent. maximum grade on the Han River Route.

Comparing rise and fall: the Yangtze River Route has 6,902 feet rise and 5,182 feet fall, as against 6,585 feet rise and 4,919 feet fall on the Han River Route. The maximum curve on the Yangtze River Route is 8 degrees whereas a maximum curve of 12 degrees was used on the preliminary survey of the Han River Route.

The total estimated cost of constructing and equipping the Yangtze River Route is $212,608,700, whereas the total estimated cost of constructing and equipping the Han River Route is $177,211,600, or a difference of $35,397,100 in favor of the Han River Route.

The Han Rive Route, therefore, has the following advantages:—

It is shorter,
Its maximum grade is less,
Its total rise and fall is less,
Its estimated cost of construction is less.

Typical gorge country near the Wushan Gorge

On the other hand, the maximum curve on this route can be made the same as that of the Yangtze River Route, as the topography of the country is more favorable along the Han River Route.

In the matter of operation; by reason of its location the Yangtze River Route would inevitably suffer a far greater loss from water competition than the Han River Route. It is quite probable that the present river transportation on the Yangtze will be developed and improved as time goes on to such an extent that some of the most potent objections which can now be raised against transportation on the Yangtze, such as slowness of movement and unreliability of the carriers, may be overcome to a considerable extent.

It, therefore, appears from all the information which has thus far been obtained from the surveys of these two routes, that the Han River Route is the better route, as regards both physical characteristics and cost of construction.

However, important as each of the factors which appear in the foregoing comparison are in the consideration of this subject, it is believed that the time has come in the development of the transportation facilities of China when a broader view must be taken and the future development of the transportation system of the country as a whole should be given its proper value in determining upon the construction of any new line of railway to serve a section of country. In other words, the effect and the bearing which any proposed line into the Province of Szechuan would have upon the other Government railways, existing and proposed, and the way in which such a line would work into the general plan of railroad development, is worthy of serious consideration.

Looking at the situation thus broadly it is of interest and it is likewise important to consider the connections which both of these proposed lines will have to the seaboard and to consider which will provide the most direct, prompt and economical service in the transportation of the great tonnage of imports and exports into and out of the Province of Szechuan.

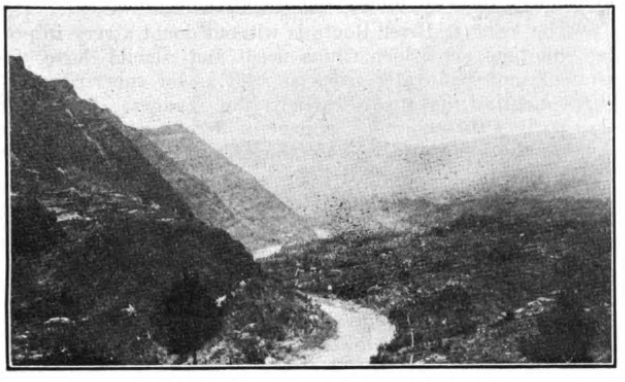
In the case of the Szechuan-Hankow Line, or Yangtze River Route, a transfer from railway cars to river boats will be necessary at Hankow. The distance by river from Hankow to Shanghai, the commercial metropolis of China, is 595.0 miles. The total distance from Chêngtu to Shanghai viâ this route—using the Szechuan-Hankow Line from Chêngtu to Hankow and using the Yangtze River boats from Hankow to Shanghai would, therefore, be 1,533.8 miles.

An alternate rail route would be viâ the Peking-Hankow Line from Hankow to Sinyangchow and thence viâ the proposed Pukow-Sinyangchow Line to Pukow, thence to Shanghai viâ the Shanghai-Nanking Railway. The distance from Hankow to Shanghai viâ this rail route would be approximately 616.5 miles, which added to the distance

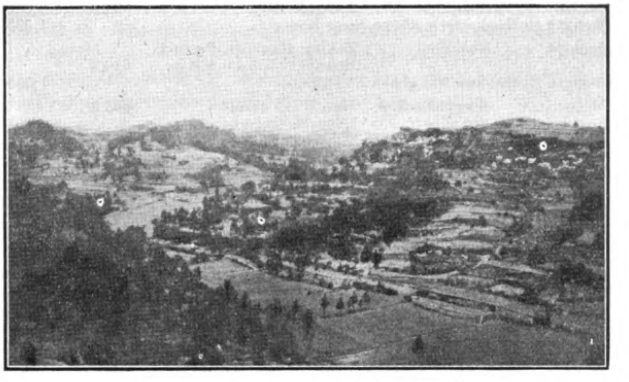
Yehtan Rapids

from Chêngtu to Hankow viâ the Yangtze River Route, 938.8 miles, would make a total of 1,555.3 miles from Chêngtu to Shanghai by an all-rail route, using the Szechuan-Hankow Line and the other lines above mentioned.

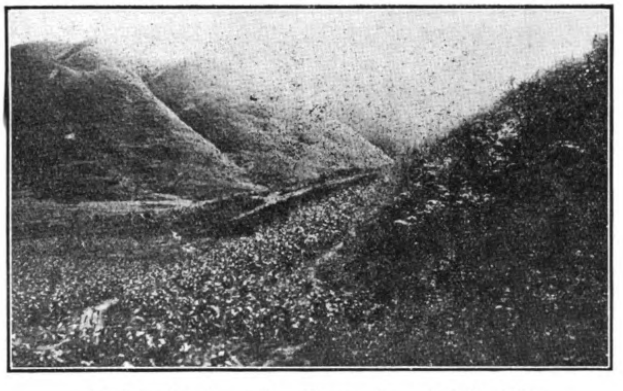
If, on the other hand, the distance from Chêngtu to Sinyangchow viâ our 1 per cent. Line (which is 4.6 miles longer than our 1.8 per cent.) be combined with the distance from Sinyangchow to Shanghai viâ the proposed Pukow-Sinyangchow Line and the present operated Shanghai-



Tungkiang River near Hangkou, Mile 540

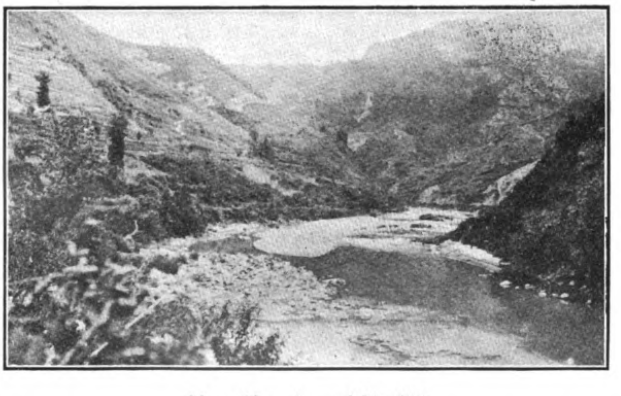


General Character of Country Forty Miles West of Chuhsien, Mile 739



Looking Southwest from Yutupa Summit, Mile 502

Country East of Nanchi



Near Chuyukuan, Mile 531

Looking Southwest from Divide Toward Chengkou

Views in the Mountains through which a Railroad can be built on the Han River Route

Nanking Railway, the total distance from Chêngtu to Shanghai will be 1,380.0 miles. The following table summarizes these figures in convenient form for reference :—

TABLE OF DISTANCES.

From	To	Via	Miles	Total Miles
Chengtu	Hankow	Szechuan-Hankow Line	938.8	
Hankow	Shanghai	Yangtze River	595.0	
Chengtu to Hankow via above *River* Route				1,533.8
Hankow	Shanghai	Peking-Hankow, Pusin & Shanghai-Nanking Rys.	616.5	
Chengtu to Hankow via above *Rail* Route				1,555.8
Chengtu	Singyangchow	Han River Route	895.5	
Singyangchow	Shanghai	Pusin & Shanghai-Nanking Railways	484.5	
Chengtu to Shanghai via above Route				1,380.0

The foregoing table indicates that the distance from Shanghai to Chêngtu viâ the Han River Route is 153 miles shorter than the Yangtze River Route, taking the shortest route from Hankow to Shanghai (the Yangtze River), to combine with the Szechuan-Hankow Line; if we take the all-rail route, the Han River Line would be 175 miles shorter. It, therefore, follows that the Han River Route would afford the most direct connection with Shanghai and the seaboard.

One of the most important features which should be given consideration in making this comparison of routes is the adaptability of the route to best serve the needs of the country—which route is best adapted, both from the financial standpoint and from the standpoint of national needs of China to best serve the territory designed to be served. The accompanying map of a portion of China shows the relative location of the two routes and their connections.

The Yangtze River Route is without doubt a very important line and one which China needs and should have for strategic and political reasons as well as for superseding or supplementing that great carrier, the Yangtze River, in transporting the enormous tonnage of Szechuan products and making the same available for the other Provinces of China and for the outside world.

The Han River Route, however, would serve the Province of Szechuan equally as well, if not better, and at the same time would provide a direct rail route (in conjunction with the proposed Pukow-Sinyangchow Line and the existing Shanghai-Nanking Railway) to Shanghai, the best ocean terminal in China and the largest receiving and distributing point in the Orient. The Yangtze River will always be a great artery of trade and will continue to carry a portion of the commerce of the country it traverses even

The Kungling Rapids on the Yangtze River

after the proposed Szechuan-Hankow Line has been constructed. On the other hand, the Han River Line will form a large part of a most important main East-and-West trunk line through the very heart of China in which there is at present no means of transportation.

A town in the Yangtze Gorges

Furthermore, according to all the data thus far furnished, and as indicated in the foregoing tabulated comparison of the two routes, the cost of construction of the Han River Route will be less and as the distance would also be less the transportation service which this line would render should be more prompt and more economical.

And considered in conjunction with the proposed Pukow-Sinyangchow Line—and it must be so considered in the larger aspects of the case—the Han River Line will render greater service to a greater population and a larger area of country than the Yangtze River Line The Han River Route, therefore, seems better adapted to serve this territory both from the standpoint of national needs and from the financial standpoint.

The Han River Line is also of the greatest strategic value to the Republic of China and would prove a most valuable military asset to the Government in time of the nation's need.

From the political viewpoint this proposed line would provide a means of business and social intercourse between one hundred million people of the interior, who now have no means of intercourse with the people of the other provinces and the outside world; this would result in the development of a spirit of nationalism and a desire for greater national unity, the value of which to the Government and to the country would be incalculable in directing the affairs of the nation, and would prove a bulwark of strength to the Central Government in resisting any aggression from a foreign power. This spirit would be reflected in a keener interest in political matters, in better conditions of government and in greater progress along all lines of national advancement.

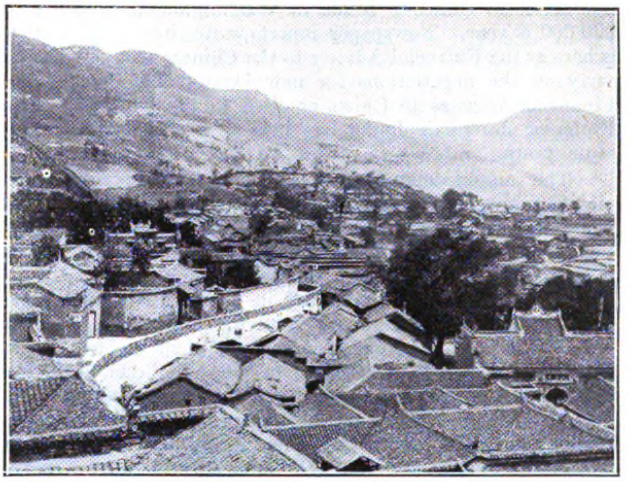
From the viewpoint of national economics—the development of material resources and the production and distribution of wealth—this proposed railway would be the great link in the chain of transportation, which will bind the East and West of China together, and which will make available the enormous natural resources of Szechuan and other tributary provinces, and will also make possible the import into these territories of large quantities of manufactured articles, machinery, and supplies of various kinds, of which these provinces are in need. The proposed railway would stimulate and build up a great commerce which would greatly enrich not only the provinces it would serve directly but indirectly the whole nation. Without an outlet such as railway facilities would afford the wonderful agricultural, mineral and other natural resources of Szechuan have remained locked up for centuries.

In the fall of 1917 when the supply of wheat was short all over the world, wheat sold for $2.50 to $3.00 per bushel in Shanghai, while at the same time in Szechuan it sold for 10 cents per bushel. Large quantities of wheat, and other grains, could have been exported if only the means of transportation had been available.

During the year 1916, there were *imported into China cereals* to the value of over $48,000,000; yet China is an agricultural country and Szechuan is said to be one of the most productive, most intensively farmed agricultural sections in the world. Its agricultural products alone for the year 1914 amounted to over 16,000,000 tons valued at $1,177,364,136.

Or, if we take coal for example: during the year 1914 China purchased from Japan more than 1,650,000 tons of coal valued at over $11,850,000, of which Hankow and Shanghai consumed about one and one-quarter million tons —while all this coal, and more, could have been furnished by Szechuan if only transportation facilities had been available so that the vast coal deposits of that province could have been developed and worked and the coal shipped to the other provinces in urgent need of it.

Taking into consideration all these conditions, the Han River Line is beyond the shadow of a doubt one of the most important railways proposed for this country.



City of Yungchow on the Yangtze

From the standpoint of the financiers, the construction of this line would involve the expenditure of a large sum of money, but the density and wealth of the population and the great resources of the country to be served would seem amply to justify this expenditure and would warrant the opinion that the line would pay. Furthermore, this line would have practically no competition, a feature which would tend to larger revenues.

Properly constructed and equipped and properly managed and developed it should prove a sound, lucrative investment, profitable alike to the Chinese Government and to the financiers.

The Railways of China

Important Facts and Figures Connected with the Existing System

THERE are 6,836 miles, or 11,001.254 kilometres, of railway at present operating in China. The railway system as it exists to-day is located principally north of the Yangtze River. The Shanghai-Nanking line, with the recently connected up Shanghai-Hangchow-Ningpo line, extends the system into south China. Construction now in progress, and plans for future construction promise to connect up the present short lines in the south so as to duplicate there ultimately the facilities now serving the north.

Speaking of the eighteen provinces, China has approximately 735 square kilometres of territory and 67,000 population for each kilometre of railway. Expressed in miles, China has approximately 460 square miles of territory and 107,000 population for each mile of railway. India has 40 square miles of territory and 8,600 population for each mile of railway. The United States has 12 square miles of territory and 3,800 population for each mile of railway. The extent of waterways in China probably will always serve to keep these average figures higher in China than in countries not so favored. Yet railways tend to become more and more an integral part of the industrial machinery of a nation, and these averages, therefore, measure to a certain extent the advance of industrial progress.

Since 1915 main and branch lines have been extended 78.056 kilometres, while loops and sidings have been increased 169.420 kilometres. Second track is almost unknown. Less than eight per cent. of the total length of line consists of branches, and out of 6,913.315 kilometres of track, nearly 75 per cent. is found in main line.

The map given in this issue confirms the fact that Chinese Government railways are essentially through lines connecting strategic points, commercially and politically speaking—the hub of the system as it exists to-day being Peking.

Railway lines in China may be classed under three distinct heads, Government Railways open to traffic, but still technically under construction, private and provincial railways, and "Concessioned" lines.

The word "owned" as used below is employed in a technical sense. It indicates the extent of line behind the securities issued for a particular railway, or behind the investment by the Government in particular railways.

To explain the headings in Table 7 it must be stated that a main line is the line of single track over which trains are operated between the principal terminals. A branch line is one built from a junction point on a main line to an outlying station over which regular traffic trains are run for public services. Other lines built from junction points are classed as sidings regardless of their length. Industrial lines are sidings which connect a main line with a factory, mine, or important industrial enterprise, and are operated exclusively for the use of such establishments.

The order of the provinces named in the table is the same as in previous reports of the Ministry of Communications, and formerly was based on the length of main line each province contained. The total length of main line and branches in 1918 was 5,521.942 kilometres. This represents an increase of 22.169 kilometres, for which the Peking-Suiyuan line* is responsible. That line during 1918 built the Tatung coal branch, in Shansi province, 19.568 km., and the Hsuanghuafu branch, in Chihli province, 8.646 km., a total of 28.214 kilometres.

In addition the Kirin-Changchun made rectifications of its previous figures adding .016 kilometres (Kirin Province) while a new survey of the Chuchow-Pinghsiang line made on the metric system resulted in a reduction of the kilometrage of that line by 6.061 (provinces of Hunan and Kiangsi).

TOTAL KILOMETRES MAIN AND BRANCH LINE IN CHINA.

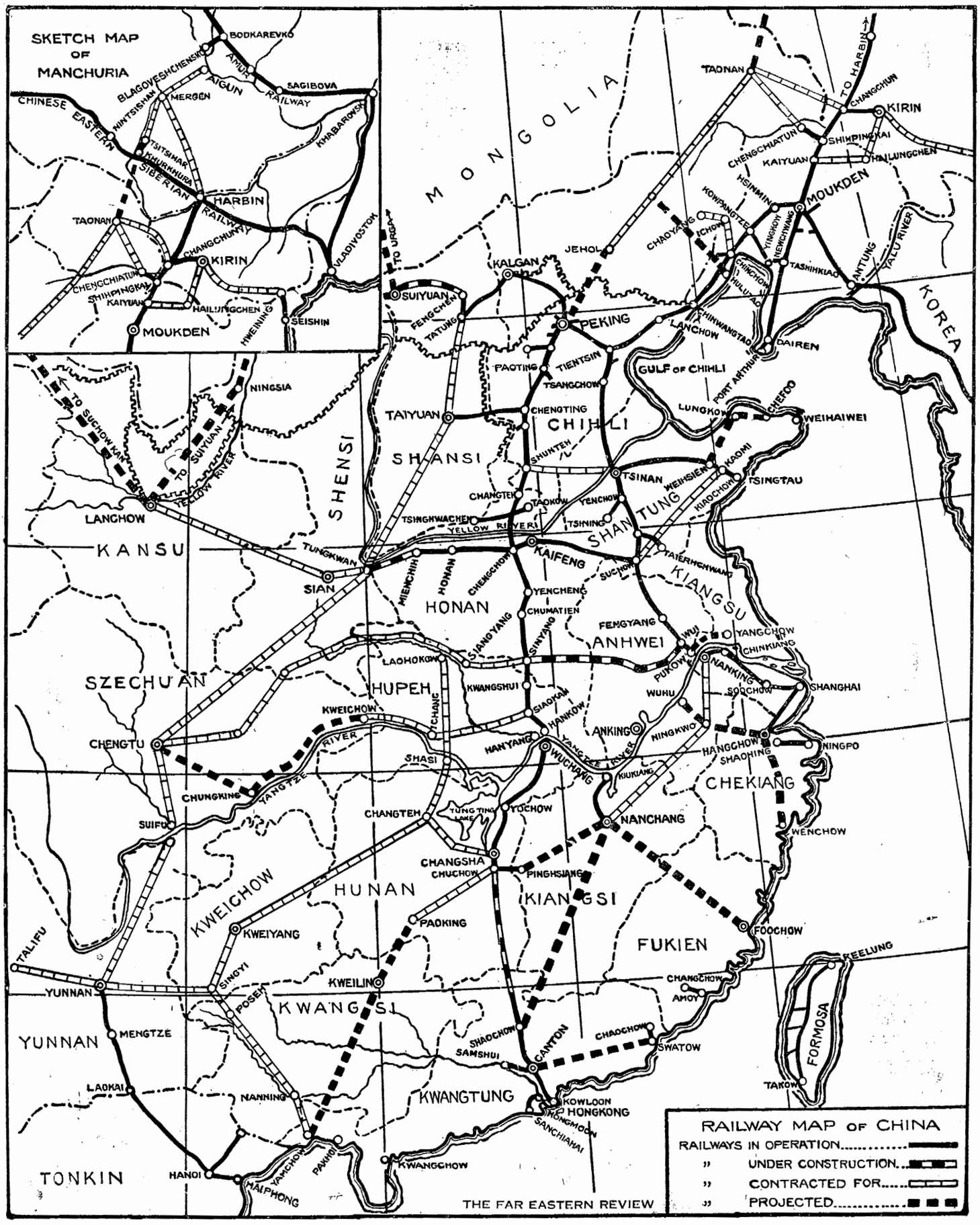
	Kilometres	Kilometres
Government Railways :—		
In Operation		5,521.942
Operated by construction forces :—		
Lung-Hai (Lanchow-Haichow)†	276.300	
Hupeh-Hunan	475.142	
Ssu-Tsen (Ssupingkai-Chengchiatun)	87.870	941.312
Total Government Railways		6,453.254
Provincial and Private Railways :—		
Kwangtung	225	
Kiukiang-Nanchang	129	
Sunning	109	
Swatow-Chaochowfu	42	
Nanking City	11	
Chung Hsing Mining Co.	43	
Tayeh Mining Co.	30	
Ching Hsing Mining Co.	15	
Kailan Mining Administration ...	16	
Taiyaokou Mines	34	
Tsitsihar City	29	683.000
Total subject to control of the Ministry of Communications		7,136.254
Concessioned Railways :—		
Chinese Eastern	1,722	
South Manchurian	1,150	
Shantung	493	
Yunnan	465	
Canton-Kowloon (British Section) ...	35	3,865.000
Total kilometres of railways in China (Miles, 6,836)		11,001.254

NAMES OF THE GOVERNMENT RAILWAYS.

Termini	Official Abbreviated Name	Km. owned
Peking-Hankow	Kin-Han	1,305.671
Peking-Mukden (Fengtien)	Kin-Feng	986.650
Tientsin-Pukow	Tsing-Pu	1,106.840
Shanghai-Nanking	Hu-Ning	327.098
Shanghai-Hangchow-Ningpo	Hu-Hang-Jung ...	286.398
Peking-Suiyuan	Kin-Sui	490.493
Shihchiaochuang-Taiyuanfu	Cheng-Tai	242.950
Taokow-Chinghua	Tao-Ching	152.453
Kaifeng-Honanfu	Pienlo	185.000
Kirin-Changchun	Chi-Chang	127.669
Chuchow-Pinghsiang	Chu-Ping	90.500
Canton-Kowloon	Kuang-Chiu ...	143.296
Canton-Samshui	Kuang-San	49.923
Changchow-Amoy	Chang-Hsia	28.000

* See description in FAR EASTERN REVIEW, November, 1919.

† See description in FAR EASTERN REVIEW, November, 1919.



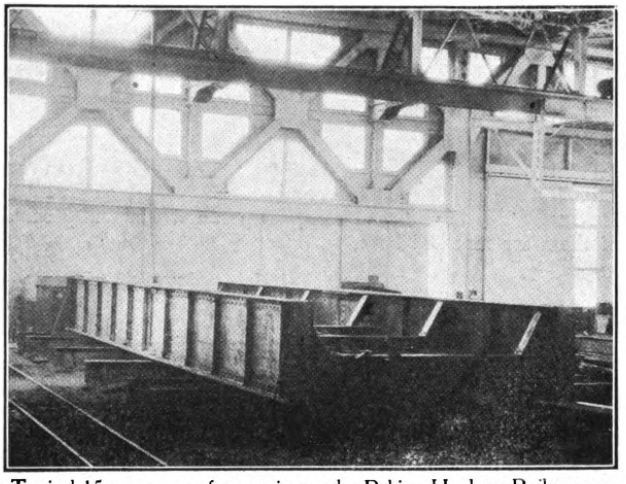
Map of Railways already Contracted for in China

This map is designed to show the relation of railroads already contracted for with those at present in operation in China. It must be pointed out that while the continuation of the line (the Lung-Hai) passing through Kaifeng eastwards, and shown as ending at Suchow, in Kiangsu Province, is not given on the map, it will probably go to some point on the Yangtze River. Originally it was designed that the terminal should be on the seacoast at Haichow, but surveys have shown that it would be better, if politically possible, to abandon that place and take the line southwards to the Yangtze to Nan Tungchow, or some port thereabouts. Tungchow is situated on deep water sufficient to float large ocean-going steamers, and naturally would form a very desirable terminal. To make Haichow possible as a port would require the expenditure of a great sum of money.

The Railways According to Provinces

The following is the measurement in kilometres of railway owned, classified by use and distributed by Provinces :—

Chihli Province Main Line, 1,437.790 km.; Branch Lines, 211.090 km.; Second Track, none; Loops, 212.891 km.; Sidings, 316.587 km.; Industrial Lines, 21.520 km. Total, 2,199.878 km.



Typical 15-metre span for repairs on the Peking-Hankow Railway, as erected in Ambrose Shops, U.S.A., of the United States Steel Products Company

Honan Province : Main Line, 905.707 km.; Branch Lines, 2.446 km.; Second Track, none; Loops, 94.598 km.; Sidings, 85.967 km.; Industrial Lines, 6,962 km. Total, 1,095.680 km.

Kiangsu Province : Main Line, 488.531 km.; Branch Lines, 16.093 km.; Second Track, 3.685 km.; Loops, 33.892 km.; Sidings, 97.092 km.; Industrial Lines, none. Total, 639.293 km.

Shantung Province : Main Line, 422.291 km.; Branch Lines, 72.130 km.; Second Track, none; Loops, 39.091 km.; Sidings, 50.678 km.; Industrial Lines, 4.941 km. Total, 589.131 km.

Shengking (Manchuria) Province : Main Line, 426.840 km.; Branch Lines, 91.967 km.; Second Track, none; Loops, 30.450 km.; Sidings, 79.437 km.; Industrial Lines, none. Total, 628.694 km.

Shansi Province : Main Line, 328.905 km.; Branch Lines, 19.568 km.; Second Track, none; Loops, 46.261 km.; Sidings, 27.739 km.; Industrial Lines, 5.009 km. Total, 427.482 km.

Anhwei Province : Main Line, 280.622 km.; Branch Lines, none; Second Track, none; Loops, 19.521 km.; Sidings, 23.367 km.; Industrial Lines, none. Total, 323.510 km.

Chekiang Province : Main Line, 205.115 km.; Branch Lines, 5.665 km.; Second Track, none; Loops, 19.988 km.; Sidings, 25.492 km.; Industrial Lines, none. Total, 254.260 km.

Kwangtung Province : Main Line, 192.220 km.; Branch Lines, none; Second Track, 18.025 km.; Loops, 11.619 km.; Sidings, 12.712 km.; Industrial Lines, none. Total, 234.576 km.

Hupeh Province : Main Line, 170.793 km.; Branch Lines, none; Second Track, none; Loops, 30.475 km.; Sidings, 27.969 km.; Industrial Lines, 5.281. Total, 234.518 km.

Kirin (Manchuria) Province : Main Line, 127.669 km.; Branch Lines, none; Second Track, none; Loops, 5.890 km.; Sidings, 20.229 km.; Industrial Lines, none. Total, 153.788 km.

Hunan Province : Main Line, 56.300 km.; Branch Lines none; Second Track, none; Loops, 2.370 km.; Sidings, .520 km.; Industrial Lines, none. Total, 59.190 km.

Kiangsi Province : Main Line, 34.200 km.; Branch Lines, none; Second Track, none; Loops, 6.390 km; Sidings, 1.190 km.; Industrial Lines, none. Total, 41.780 km.

Fukien Province : Main Line, 28.000 km.; Branch Lines, none; Second Track, none; Loops, none; Sidings, 3.535 km.; Industrial Lines, none. Total, 31.535 km.

Grand Total : Main Line, 5,102.983 km.; Branch Lines, 418.959 km.; Second Track, 21.710 km.; Loops, 553.436 km.; Sidings, 772.514 km.; Industrial Lines, 43.713 km. Total, 6,913.315 km.

This property has been acquired partly by investment of Government funds and partly by means of loans. The amounts under each category as well as the changes during 1918 are shown as follow :—

Liability	Amount	Increase	Decrease
Permanent Government Investment	$115,959,282.70	$2,079,190.68	—
Additions to property through Surplus	28,186,795.51	3,967,487.08	—
Funded Debt Retired through Surplus	15,674,655.03	1,617,810.75	—
Total Government Equity ...	$159,820,733.24	$7,664,488.51	—
Shares	$3,906,787.33	—	$8,857.15
Mortgage bonds	264,156,938.41	—	2,550,832.22
Other Secured liabilities	14,183,051.66	—	368,098.16
Non-Government Equity ...	$282,246,777.40	—	$2,191,591.21

Sino-British Mining Enterprise for North Shansi

The coal fields of Tatung, in the north of Shansi Province, which we mentioned in an article on "Opening China's Great North West," in the November issue of the FAR EASTERN REVIEW, as of great potential value in the development of railway and industrial effort in this tremendous region, are to be investigated under an agreement between the Kailan Mining Administration and the Governor of Shansi Province, General Yen Hsi-san. The agreement was signed by Major W. S. Nathan, C.M.G., on behalf of the Kailan Mining Administration and provides for joint exploitation of the field with the Shansi Provincial Government.

This is an important step inasmuch as it opens the way for the introduction of modern mining methods in a region where there is believed to be an abundance of high quality coal and bordering on a territory which will be a great user of coal in the future when colonization plans are carried into effect and when the railway extensions across the Gobi are made.

At present coal is mined by natives in the hills near Tatung and is used on the railway and carried for sale on the Peking market. In order to give facilities for getting the coal from the mines to the market the Peking-Suiyuan Railway authorities built a branch line to Kaochuan. Coal is got out by the Chinese, on the slope and step system and is bituminous. It is of the middle Jurassic period and is said to be amongst the best of its kind in China, making good coke suitable for smelting.

The future of this new enterprise will be watched with great interest, especially as China is now on the verge of a great industrial era.

Railway Progress in China in 1919

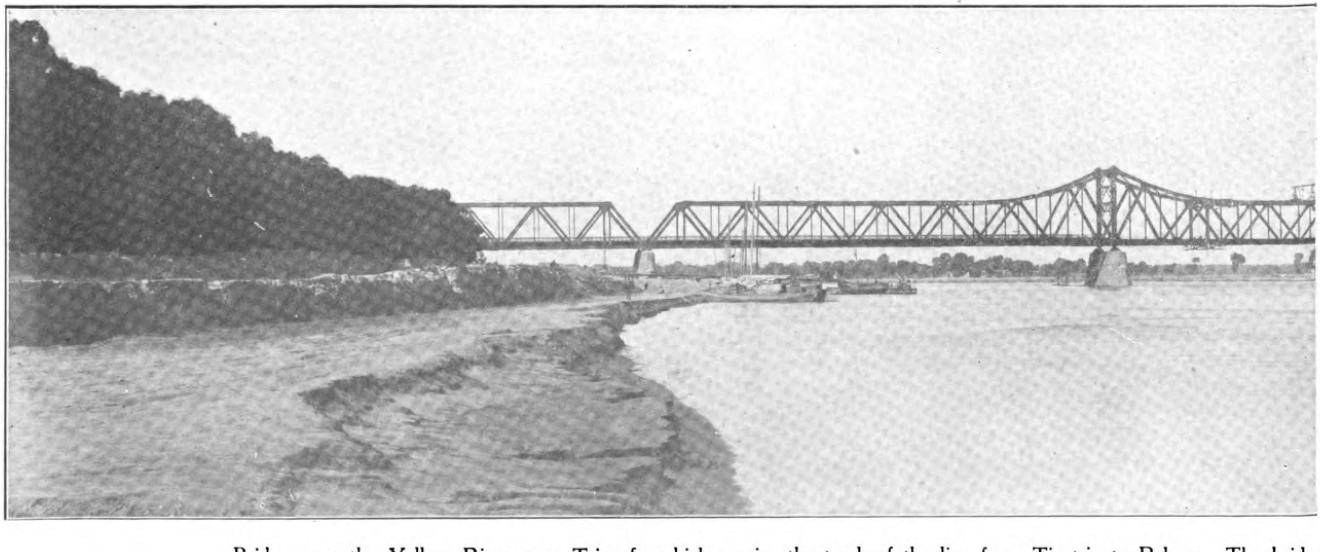
Last Year shows Advancing Earnings and Many Administrative Improvements, including the Appointment of Foreign Technical Advisers to Effect Standardization of Rolling Stock, etc.

THE September number of THE FAR EASTERN REVIEW contained a summary of the Statistical Report issued by the Ministry of Communications covering the operations of the Government railways during the year 1917. In the course of that review, attention was called to the fact that the Ministry seemed to be making progress toward getting out its reports promptly and said "It will be interesting to see if the process of catching up with the calendar will be fast enough to bring out the report for 1918 before the end of the current year." The Ministry has answered this challenge by producing the report for 1918 not only before the end of the year 1919, but a good full month before the end. To be exact, a copy was delivered at our Peking office on the 27th of November. Thus within less than eleven months after the close of the fiscal year to which it refers, this report is in the hands of the public. As many of the lines do not close their books until about five months after the close of the year, the preparation of this considerable volume has been accomplished in less than six months. These results compare favorably with those in any foreign country, especially when it is taken into consideration that the press work has been done entirely by native printers. The latter consideration in itself is one of some moment, and the entire performance is a splendid illustration of what can be done in China, if to patience there be added perseverance, and to perseverance there be added a willingness to profit by past experience. The first report to cover a full year's operations was for the year 1915. It appeared two years and seven months after the close of 1915. The report for 1916 appeared two years and three months after the close of 1916. The report for 1917 appeared one year and seven months after the close of 1917. and now the 1918 report, circulated within eleven months after the close of that year, brings the series up-to-date and on time. To do this, the Ministry has brought out three reports during the calendar year 1919. This is a record feat and one which reflects great credit upon the administration. If all branches of the Chinese Government service will do their work with the promptitude and the evident precision which marks the work of the statistical division of the Ministry of Communications, things will be in a fair way in China while some of us are still alive to behold it.

The general results for the year 1918 were given on page 783 of the December number of the FAR EASTERN REVIEW. For the sake of completeness and continuity some of them are repeated here.

	1918	1917	Increase.	Decrease.
Operating Revenues	$77,652,152.95	$63,873,703.67	$13,778,449.28	—
Operating Expenses	34,322,615.12	30,040,564.50	4,282,050.62	—
Net Operating Revenues ...	43,329,537.83	33,833,139.17	9,496,398.66	—
Income Debits ...	11,033,562.00	13,303,440.24	—	$2,269,878.24
Income Credits ...	1,209,143.74	1,100,496.79	108,646.95	—
Net Income Debits	9,824,418.26	12,202,943.45	—	2,378,525.19
Surplus for the year	$33,505,119.57	$21,630,195.72	$11,874,923.85	—

In explanation and analysis of the results epitomized in this condensed statement the report contains 84 pages of "text," 40 "tables" and 9 colored or graphic diagrams. One of the most commendable features of the text is the apparent willingness to admit the unfavorable features of the situation as well as the favorable. This will do more to gain confidence in Chinese statistical reports than the publication of the report itself. Furthermore, it leaves the administration in a perfectly defensible position. If railway management were already perfect, there would be no excuse for wasting money in unifying accounts, statistics, and practice. But everyone knows that administration is not perfect, no more



Bridge over the Yellow River near Tsinanfu which carries the track of the line from Tientsin to Pukow. The bridge

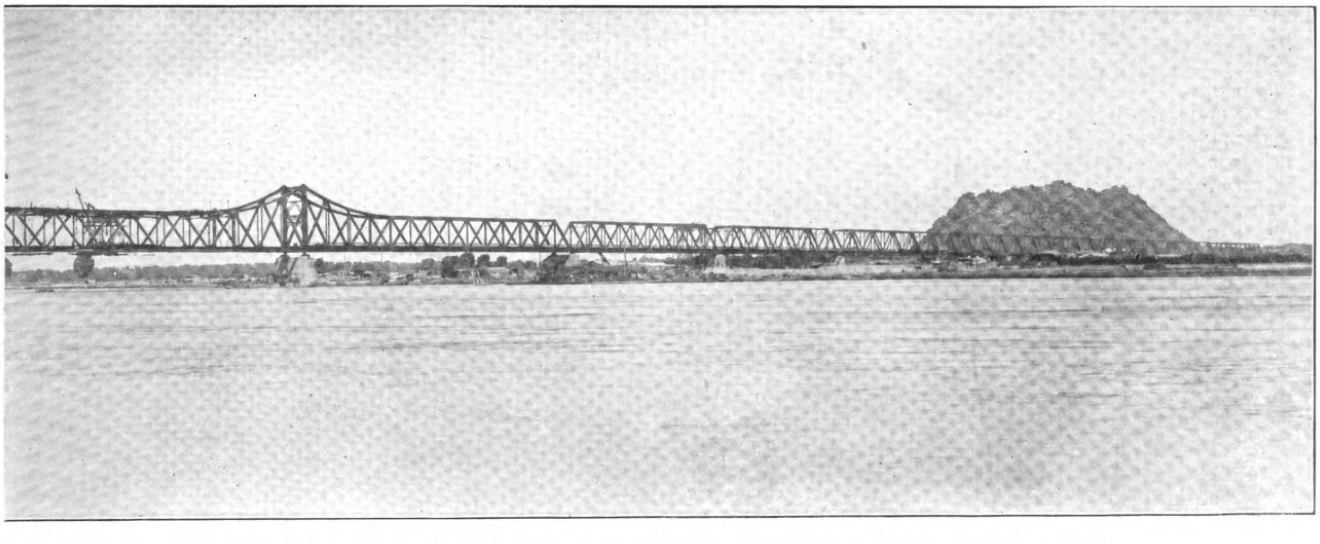
in China than elsewhere, and the acknowledgement of faults, therefore, does not in any way imply an apology by the administration. Rather it is an earnest of improvements which are to be expected. Also, the disposition to claim credit for every lucky incident has been successfully resisted. A good evidence of this is to be found in the explanation given for the unusual increase in Operating Revenues, an increase of over 20 per cent. Says the report, page 2 :

> These results are abnormally favorable. The revenue for the year is larger by perhaps $2,000,000 due to the fact that interruptions in service due to floods in 1917 left considerable traffic unmoved in 1917 which added to the business of 1918. The loss of this traffic in 1917 makes the contrast again more conspicuous. Exceedingly favorable weather in 1918 also enabled the several lines to realize all the possibilities of traffic during the year. Allowance should be made for these factors in gauging the prospects for the coming year and in calculating the normal increase in business. Nevertheless, the year gives a gratifying demonstration of the capacity of the lines composing the Government property and of the fundamentally sound conditions underlying business in the territory served.

And again on page 24 :

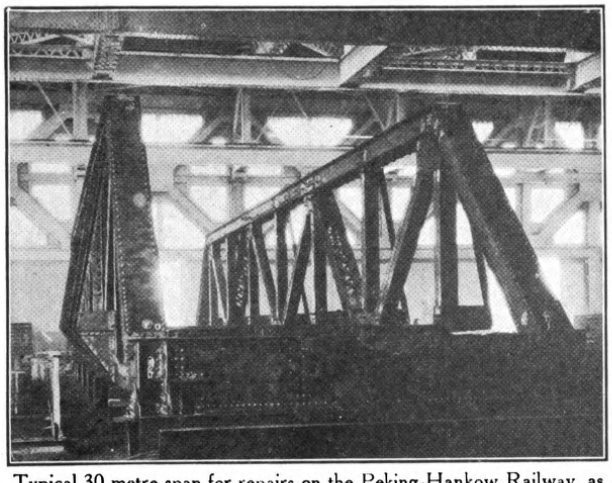
> These revenue figures contain $5,789,737.84 for the carriage of Government passengers and goods—mostly military. This is an increase of $2,832,143.44 in Government service over the year before. In addition there was an increase in revenue from service stores and from material for other Railways of $254,675.79 and $132,244.83 respectively. If these items be subtracted from the total increase in revenue, the gain from commercial sources is $10,559,378.22. Of the $77,652,152.95 gross revenues for the year, Government traffic of $5,789,737.84, is not collected in cash but is cared for by bookkeeping transfers between the lines and the Government. Similarly revenue from the carriage of service stores is a debit to the expenses and a credit to the revenue of the same line. Revenue from the haul of materials for other railways is credited to one line but is debited to another, so that the real cash transactions of the combined lines are not enhanced thereby. Combining these two items, $1,533,176.37 and $336,937.75 respectively with Government traffic revenue, above noted, and a total of $7,659,851.96 is in fact not collected by the railway in cash. This is not to be confused with services rendered by the railways to the Department of Posts for which only a nominal charge is assessed, nor for services rendered to the military by way of housing troops in wagons for which nothing is assessed. Subtracting these bookkeeping transfers from the total revenue reported leaves $69,992,300.99 commercial revenue compared with $59,432,915.77 in 1917—yielding an increase of nearly 18 per cent.
>
> Unfortunately, this gratifying evidence of the growth of railway service does not at the same time accurately measure the financial benefits which the Government derived from the ownership of these railways. Conditions over which this Ministry had no control made it seem prudent to accept upon certain lines bank notes of depreciated value in payment of services rendered. Just what allowance should be made in the nominal total revenue reported above, is difficult to estimate.

However, according to page 46 of the report the discount on depreciated currency was $1,200,000 less than during the preceding year—the 1918 figure being $965,744.85. Of course, as the report admits " There remained in the possession of the lines at the close of the year a considerable amount " of such notes, upon which the losses will be recorded during the year in which the loss occurs. But on pages 49 and 55, depreciated notes on hand amounted to $2,000,000 among cash and $6,940,000 compared with $11,000,000 in cash and over $1,000,000 in special funds at the end of 1917. On page 20 of the report it is stated that some $12,400,000 of depreciated notes were disposed of during the year in the purchase at par of Government bonds. It thus appears that practically all of such notes on hand at the beginning of 1918 were disposed of at par for bonds, and that the notes on hand at the end of the year, plus those disposed of at a discount, as evidenced by discount on depreciated currency, approximates the amount collected during the year. Assuming a discount of fifty per cent. on those disposed of yields nearly $2,000,000 par value, this added to the $8,940,000 in cash and special funds shows that practically $11,000,000 were collected during the year. Again using the discount of 50 per cent., we may say that $5,500,000 should be deducted from the returns of the year in order to put them in " hard cash " terms.



is 4,180 feet long, and is built on eleven piers. A full description appeared in THE FAR EASTERN REVIEW of October, 1912

Even this leaves a splendid increase of real earnings over the year before, assuming that the 1917 figures represent nothing but silver—which was not the case by any means. In fact 1918 saw considerable progress toward restricting the use of inconvertible notes on the government lines.



Typical 30-metre span for repairs on the Peking-Hankow Railway, as erected in Ambrose Shops, U.S.A., of the United States Steel Products Company

Operating expenses are analyzed in fifteen pages of text, a condensation of which may be given as follows :

Department.	Expense. 1918	Expense. 1917	Increase. Total.	Increase. Per cent.
General	$6,286,749.01	$5,644,587.63	$642,161.38	11
Traffic	4,302.860.07	4,025,087.46	277,772.61	6
Running	8,268,194.22	6,671,754.47	1,596,439.75	24
Maintenance of Equipment	6,917,142.38	6,308,790.08	608,352.30	10
Maintenance of Way ...	8,262,909.25	7,236,697.53	1,026,211.72	14
Interchange of Rolling Stock	284,760.19	153,647.33	131,112.86	85
Total Operating Expenses	$34,322,615.12	$30,040,564.50	$4,282,050.62	14

The increase under General is evenly divided between the two parts, Administration and Special. The increase under Administration is $321,000. Of this $105,000 came from the Peking-Suiyuan line—$85,000 of which occurred under the head "Direction." The Peking-Hankow with an increase of $105,000, the Chuchow-Pinghsiang with an increase of $43,000, the Peking-Mukden with $35,000 and the Kirin-Changchun with $22,000 make up most of the remainder, On the Chuchow-Pinghsiang "Loss on Stores" (due to military disorders) as well as "Direction" cause the increase. On both the Peking-Suiyuan and the Chuchow-Pinghsiang "Direction" expenses increased nearly fifty per cent.

Traffic expenses increased upon all lines nearly $278,000 and show the smallest increase of any department. This is due to the cutting down of agency commissions on the Tientsin-Pukow to the extent of nearly $297,900. Except for this the increase under traffic would be about 13 per cent. The large increases are upon the Peking-Hankow with $170,000, Shanghai-Nanking with $87,000, Kirin-Changchun with $79,000, Peking-Mukden, $40,000, Shanghai-Hangchow-Ningpo, $40,000 and the Peking-Suiyuan, $32,000. If it were not for the circumstance above mentioned, the Tientsin-Pukow would show an increase of $100,000 but as it is this line shows a decrease of $196,000.

Running expenses increased $1,596,000—in round numbers—or 24 per cent. When it is remembered that ton kilometres increased no more than 24 per cent. and that passenger kilometres increased only 9 per cent., this increase in running expense is seen to be out of proportion.

Considering the subject by sub-divisions, locomotive expense, that is fuel and wages of enginemen, principally made up $1,408,000 of the increase. The increase in the price of coal upon the Shanghai-Nanking, the Shanghai-Hangchow-Ningpo and the Canton-Kowloon will be found to explain in large part the increase in this head beyond what would be expected from the increase in traffic hauled.

The expense of maintaining the equipment of the government lines in 1918 was $6,308,790.08, which is an increase over 1917 of $608,000, in round numbers. The total includes $1,777,421.89 depreciation charges, which is some $60,000 less than similar charges in 1917.

Maintenance of way expense in 1918 amounted to $7,236,000, in round numbers. This is an increase of $1,026,000, of 14 per cent. over the year before. The lines with large increases are the Tientsin-Pukow with $564,000, the Shanghai-Nanking with $105,000, the Peking-Mukden with $103,000, Kaifeng-Honan, $97,000, Kirin-Changchun, $97,000, Peking-Hankow, $90,000. The Shanghai-Hangchow-Ningpo shows a decrease of $55,000. These increases are quite generally due to replacement of sleepers. This is true of the Tientsin-Pukow, Kirin-Changchun, Kaifeng-Honan, and Peking-Mukden. The Tientsin-Pukow also had a large increase under extraordinary, due to floods of the year before, as did also the Peking-Hankow. The Peking-Hankow had a considerable decrease under sleepers, but this is partly overcome by large increases in superintendence, watchmen, station buildings and staff quarters. The Shanghai-Nanking shows its increases under station buildings and maintenance of wharves. The Shanghai-Hangchow-Ningpo shows its decrease principally under sleepers.

The increase under Interchange of Rolling Stock was entirely upon the Tientsin-Pukow.

Not only does every department of expense show an increase over 1917, but every line considered separately shows a similar increase—even the lines which show decreases in business. The principal increases by lines, are on the Peking-Hankow, $976,000, the Tientsin-Pukow, $956,000, the Shanghai-Nanking, $766,000, Kirin-Changchun, $321,000, Peking-Suiyuan $311,000 and Shanghai-Hangchow-Ningpo, $305,000.

With an increase of Operating Revenues of 22 per cent. and in Operating Expenses of only 14 per cent., one is prepared for a considerable improvement in the already low operating percentage of "Ratio." By lines this was as follows :

OPERATING PERCENTAGE BY LINES, 1918 AND 1917.

	Name of Line.	1918	1917
1.	Peking-Hankow	33.1	37.4
2.	Peking-Mukden	33.5	38.4
3.	Shihchiachuang-Taiyuan (Cheng-Tai) ...	41.7	50.8
4.	Taokow-Chinghua	44.9	41.3
5.	Tientsin-Pukow	50.2	50.9
6.	Kaifeng-Honan	55.4	46.3
7.	Kirin-Changchun	60.5	69.7
8.	Shanghai-Nanking	61.1	52.8
9.	Peking-Suiyuan	65.1	68.5
10.	Shanghai-Hangchow-Ningpo	86.2	81.2
11.	Chuchow-Pinghsiang	99.6	82.3
12.	Canton-Kowloon	112.9	104.6
13.	Changchow-Amoy	187.5	159.5
	Chinese Government Railways	44.2	47.0

The performance of the combined lines is markedly better than in 1917. This is due almost wholly to the improved records on the Peking-Hankow and the Peking-Mukden, both of which show a very low percentage. The improvement upon the Cheng-Tai and the Kirin-Changchun are equally satisfactory but the volume of business upon those lines is not sufficient to effect the general average to any great extent. The poorer record upon the Kaifeng-Honan, the Shanghai-Nanking and the Shanghai-Hangchow-Ningpo is a matter of some concern and in the case of the latter two lines was due in considerable part to the exhorbitant prices paid for coal. The Peking-Suiyuan shows a better figure than in 1917, but is still behind its record of earlier years.

The Peking-Hankow holds its customary place at the head of the list, but it is so closely pressed by the Peking-Mukden that if Peking-Hankow rates were reduced to Peking-Mukden levels, their positions might be reversed. The effect of rate levels, has a pronounced effect upon operating percentage. A high rate is as effective as low expense in keeping the percentage low, provided, of course, that the rates still permit a full flow of traffic.

The increase in net operating revenue, given above, is not far short of 30 per cent. For the combined lines it is equivalent to 10.4 per cent. upon all investment assets, compared with 8.2 per cent. in 1917. Net operating revenues per kilometre of line amounted to $7,921 silver. This is especially significant, now that the silver dollar is worth as much or more than the gold dollar, when comparison is made with similar earnings in other countries. Pre-war earnings in such countries as England, Germany, and the United States were respectively $6,655, $4,150 and $2,442 per kilometre of line. While in Australia, Canada, India and Japan, they were respectively, $1,076, $1,579, $1,784, and $3,413 per kilometre of line. Even if one were to assume the old 2 for 1 rate of exchange the Chinese Government railways are seen to be among the most profitable in the world.

The largest income debt item is interest on funded debt. It amounted to $8,547,500.54 compared with $10,555,727.51 in 1917. This is a decrease of $1,508,-226.97—due in part to a reduction in funded debt on certain lines, but due principally to the more favorable rates of exchange. Practically all interest on funded debt must be paid in foreign money which is on a gold basis. The increasing price of silver, which is the Chinese standard, therefore makes the purchase of the gold for interest payments correspondingly less. In effect, the favorable rates of exchange bring about a reduction in interest rates. The amount paid in 1918 is 3.07 per cent. on the funded debt and other secured indebtedness outstanding at the end of the year.

If all interest, rents, taxes, and similar income debit items were to be totalled, it would be found that for every dollar of such debits there were over four dollars of net revenues and other income credits to meet it.

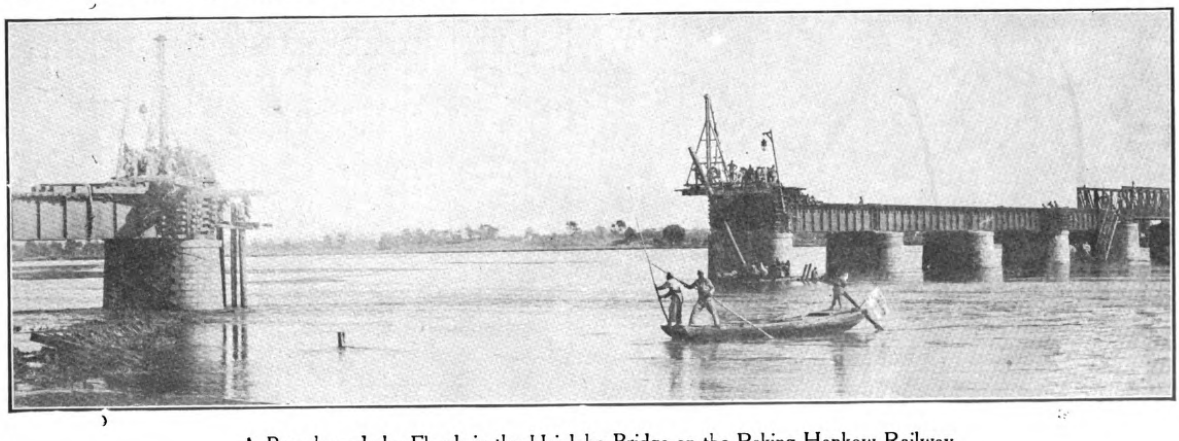
The credit balance for the year—often called surplus for the year—was $33,505,119.57. It would permit the payment of interest charges a second and a third time and still leave a balance much larger than the balance in 1915—the first year under the uniform classification of accounts.

The Government owns a considerable equity in these properties. What profit do they pay upon this investment? On December 31, 1918, this permanent Government investment of the reporting lines stood on the books at $114,169,300. At five per cent., the annual interest charge would be $5,708,465. Thus after allowing for this reasonable return upon permanent Government investment, there would remain out of the balance of $33,505,120 a clear profit of $27,796,655. Or if it be put the other way, the balance stated above is 29 per cent. upon permanent Government investment.

Under such encouragement it is not unexpected that the Government is rapidly increasing its investment in these lines of railway. It is accomplishing this in several ways—by the repayment of loans, by additions to the property out of earnings, and by choosing to regard as permanent investment sums which hitherto had been considered as temporary advances only. The Government now owns over one-third of the total investment in these lines. The amount and the changes during the year are shown in the following statement taken from page 6 of the report :—

Liability.	Amount.	Increase.	Decrease.
Permanent Government Investment	$115,959,282.70	$2,079,190.68	—
Additions to property through Surplus	28,186,795.51	3,967,487.08	—
Funded Debt Retired through Surplus	15,674,655.03	1,617,810.75	—
Total Government Equity	$159,820,733.24	$7,664,488.51	—
Shares	$3,906,787.33	—	$8,857.15
Mortgage bonds	264,156,938.41	—	2,550,832.22
Other Secured liabilities	14,183,051.66	$368,098.16	—
Non—Government Equity	$282,246,777.40	—	$2,191,591.21

A further useful and interesting feature of the report is the comparison given in the tables with the results of previous years, beginning in 1915 when uniform statistics were first available. From one of these we learn that passen-



A Breach made by Floods in the Hsinloho Bridge on the Peking-Hankow Railway

ger kilometres have increased during the four years from 1,900,000,000 to 2,300,000,000 or something over 20 per cent. This, of course, is only a moderate increase. But from another table we find that ton kilometres from 2,250,000,000 to 3,425,000,000 or over 50 per cent. This is a rate of increase fully equal to that in the United States during that unusual decade of expansion between 1900 and 1910. When it is remembered that this increase has taken place during years when it was impossible to purchase new equipment, and that the carrying capacity of equipment during this period has actually increased less than 4 per cent., one begins to appreciate the enterprise and energy of operating officials in meeting the emergency and to speculate on what the increase in goods traffic might have been, had there been no shortage of wagons.

Speaking of equipment, the report shows that seven new locomotives were added on the Peking-Mukden and Peking-Suiyuan lines during 1918 and that 200 goods wagons, leased under the notorious Hsu Shih-ying agreement, were received by the Tientsin-Pukow. The performances of all of these forms of equipment were much in excess of the figures of the year before.

The report for 1918 is properly reviewed in an estimate of the year 1919, not only because of the fact that it appears in the latter year, but also because it furnishes the background against which any picture of 1919 must be sketched.

What of revenues in 1919? These may be approximated in several ways. The first of these is to arrive at a normal annual increment. This may be fixed upon by comparing the revenues of previous years, as follows:

	Revenue.	Increase.
1915	$57,063,000	—
1916	62,762,000	$5,699,000
1917	63,874,000	1,112,000
1918	77,652,000	13,778,000

From the above it is quite apparent that as yet there is no "normal" annual increase. The fluctuations are too violent. As has been stated before, the floods in 1917 reduced that year's earnings far below what they would have been otherwise, and held over traffic which boosted the 1918 figures far above what they should have been. Probably an addition of $3,000,000 to the 1917 figures and a subtraction of that amount from the 1918 results would put the matter about right. Even then, the results would leave the increase of 1918 over 1917 nearly $8,000,000. However considering the other peculiarly favorable conditions in 1918, this appears quite reasonable. By reducing the 1918 revenues to a normal of about $74,500,000 we find that the increase of the three years since 1915 is about $17,500,000 or a little less than $6,000,000 per year. If this amount be added to the normal 1918 figure of $74,500,000 we arrive at about $80,400,000 as the estimated revenue for 1919—unless there are some unusual factors to take into consideration. But 1919 seems to have been quite a usual year. At least, the Peking-Hankow has been broken by high water several weeks at a time, there has been considerable military traffic, several of the smaller lines in the south have almost had to suspend from military causes, there have been local droughts, there was a cholera scare for a time, but there have been no calamities, the crop on the whole has been good, and trade has gone its way relatively unmolested. Yes, 1919 has been quite normal.

An innovation which the Railway Department of the Ministry of Communications has inaugurated during the year permits of a much closer approximation of results than has been possible hitherto. Every ten days it gives out an approximate return of traffic. This is in itself something of an estimate, but it is made for each individual line, and based upon data which is probably at least 85 per cent. actual. The last of these made public at the time these lines were written covered the nine months ending September 30. It included two lines, the Wuchang-Changsha and the Shihpingkai-Chengchiatun, which were not included in the 1918 statement of earnings. But if these be eliminated from the totals, the operating revenues at the end of September aggregated $56,789,000—or practically the same as the revenue for the entire year of 1915.

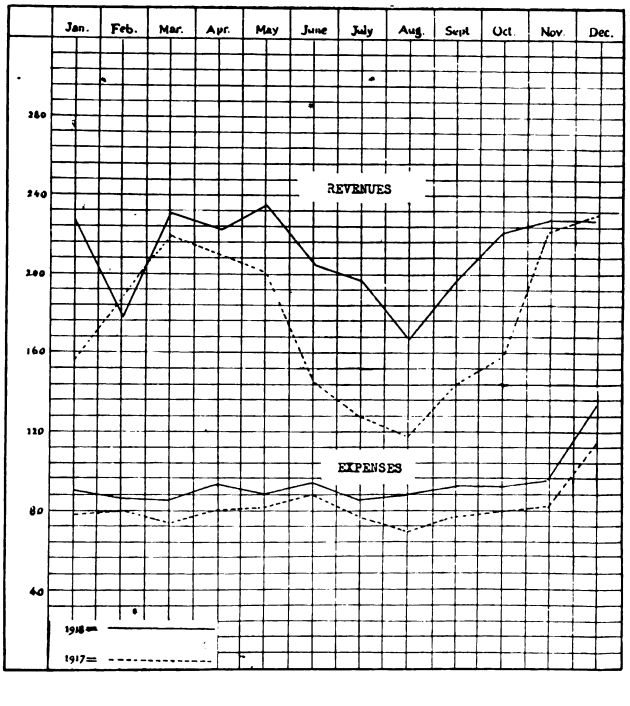
Now the remaining months of the year are the most important of all,* hence any great fluctuation during October, November and December will be fatal to any estimates for the year. But according to all reports, everything was going steady when this was written, and no large fluctuations are looked for. By taking the percentage which the earnings up to September 30 bore to the total for the year during previous years and applying that to the $56,789,000 above, we may arrive at a probable revenue figure for the year.

Year	Revenue earned up to Sept. 30	Revenue for the Year	Per cent. earned by Sept. 30
1915	$39,817,000	$57,063,000	69
1916	44,686,000	62,762,000	71
1917	45,039,000	63,874,000	70
1918	56,914,000	77,652,000	73
Four years ...	$186,456,000	$261,351,000	71

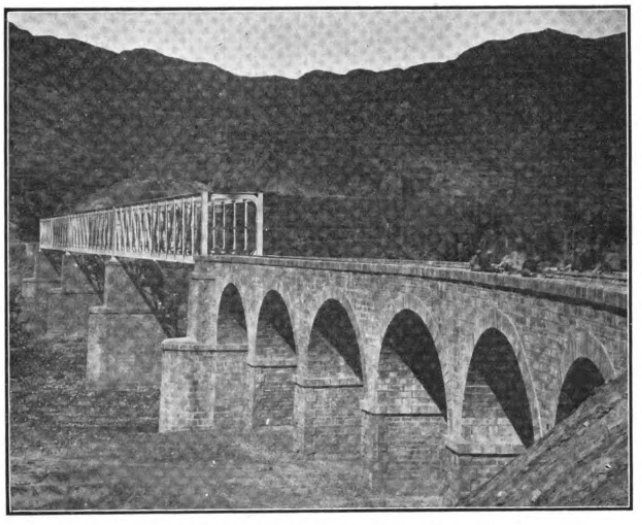
Calculated upon this basis, earnings for the year 1919 are estimated at $79,984,000—practically $80,000,000. The increase over 1918 is, therefore, only about $2,500,000. After the tremendous increase of 1918 over 1917 this may be somewhat disappointing until there is recalled the facts surrounding the increase in 1918. When these are considered, and we go back to the normal figures for 1918 for a comparison ($74,500,000), we find that the regular normal increase of between $5,000,000 and $6,000,000 is right on hand as usual.

However, the particular lines to "fall down" in revenue this year are not the lines whose earnings in 1918 were in-

*Average Daily Operating Revenues and Expenses, by Months, Chinese Government Railways, 1917 and 1918



flated by tonnage left over from 1917—that is, the Peking-Hankow and the Tientsin-Pukow. Both of these lines show a substantial increase to date over the corresponding months of 1918. The delinquents are the Peking-Mukden and the Cheng-Tai. Yet the floods are responsible, for they caused an unusual movement of grain and other foodstuffs into Chihli to take the place of supplies destroyed. This movement is absent in 1919, which accounts for the decrease on the Peking-Mukden particularly.



A Bridge over the Niang Tzi-kuan, on the line to Taiyuanfu

In view of the high earnings during 1918 and the needs of a developing traffic, budget allowances for expenses in 1919 are higher than those for 1918. In addition the prices of materials, which have been steadily mounting during the war, will have full effect during 1919, whereas in 1918 a considerable portion of the supplies consumed were those which had been purchased in earlier years before the present high levels had been attained. Although the attention of managers has been closely fixed upon the necessity of keeping expenses down to a minimum compatible with service requirements. Operating expenses in 1919 will probably exceed those of 1918 by an amount equal to the increase in operating revenues. Hence, net operating revenues will be no larger in 1919 than they were in 1918, in all probability. This is universal experience. A year of tremendous traffic scales up the standard of expense which is rarely if ever scaled down. However, the rate of exchange continues to make the cost of interest payments, which are made in gold, cheaper in terms of Chinese currency. This, together with the decreasing amount of mortgage bonds outstanding will probably result in a further decrease in interest charges by nearly a million dollars. Hence in the final balance for the year, we shall find probably a million dollars more, than in 1918—or about $34,500,000.

The final balance for the year will be much better than that for 1918 in another respect—it will not contain nearly so large a proportion of inconvertible notes. During the year 1918 there was little restriction to their use upon the four big lines—the Peking-Mukden, the Peking-Hankow, the Tientsin-Pukow, and the Peking-Suiyuan these lines received practically all of their passenger revenue in these notes, as well as certain other revenues. During 1919 the Peking-Mukden has collected all of its revenue in silver, the Tientsin-Pukow has done similarly since April 25, and since July 16 the Peking-Hankow and Peking-Suiyuan lines have reduced the acceptance of notes to local fares and local baggage charges only.

Up to the present, reviewers of railway progress have invariably apologized for the state of railway administration in China by diverting attention to the fact that in the face of all the discouraging conditions, such as military operations, demoralized currency, banditry, plagues and inefficiency of administration, railway earnings were steadily growing—indicating a fundamentally healthy condition of the Chinese people. The year 1919 marks a change, which let us hope is permanent. It is the increase in earnings, if anything, which would be particularly criticized this year. But that is quite satisfactory, while the signs of progress in administration are very clear.

On the Peking-Suiyuan line a few miles of actual construction has been effected. Provisions have been agreed upon for an extension of the Taokow-Chinghuachen line southward to the Yellow River, and arrangements have been made for a resumption of work on the Canton-Hankow line. The Peking-Mukden, Peking-Hankow, and the Taokow-Chinghuachen lines have made comparatively large purchases of locomotives and goods wagons, some of which have arrived.

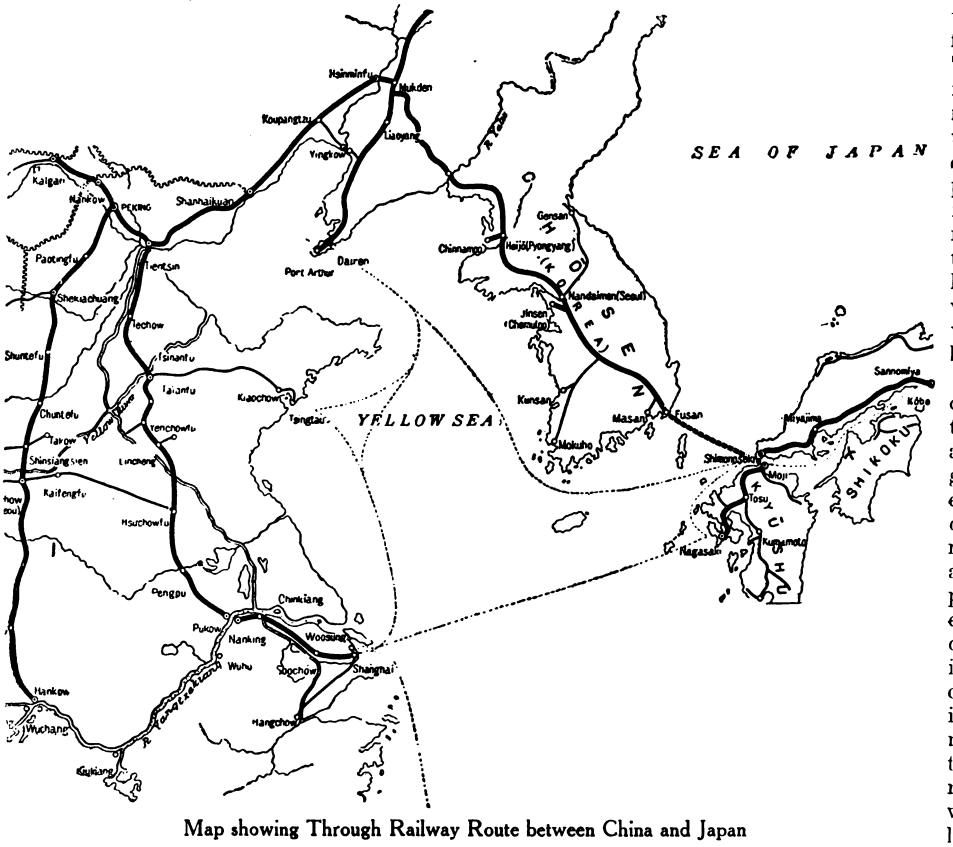
Early in the year, the Standing Committee of the accounting officers formulated a system of accounts and drew up standard forms to be used in all the stations upon the Chinese Government railways. By the use of these forms and uniform rules, it will be possible to transfer station masters and station clerks from one line to another without putting them through a preliminary course of instructions. It will permit of supervision of the management of the different lines, without loss of time. And what is more important, it will permit of supervision of the management of the different lines, by inspectors from the Ministry, which at present is impossible because each line has a different system of its own. This work is fundamental of course to the standardization of audit procedure in head offices, which is desirable in order to permit of efficient supervision from the Ministry. Due to the tedious work of correcting proofs of the forms and rules governing, and to the necessity for translation from English, in which the system was drawn, into Chinese and French, this system of station accounts has not yet been promulgated. But it is only a matter of a few weeks before this will be done. The next subjects to be considered by the accountants are the standardizing of store accounts and the accounts of engineers on construction. Sub-committees have been formed which are expected to report during the coming year.

The Traffic Managers of the Government railways also took a very important step toward welding the several lines into a real Government system—two steps, in fact. The first of these was to adopt rules for the general interchange of goods wagons. For some time, the Ministry of Communications had been urging the various lines to compose their divergent views sufficiently to permit of this, but had always encountered such a statement of difficulties to be met with that no action was taken. Several of the lines had made arrangements with their immediate connections for a limited amount of interchange, but if the shipments were billed to more than a hundred miles, say, beyond the junction point, transhipment was required. The present arrangement falls far short of effecting an actual " pool " of goods wagons, and, therefore, defeats in a degree the Ministry's aim to eliminate all unproductive empty haul as well as its desire to transfer wagon supplies at will according to the fluctuating demands for space upon the different lines. But the new rules do eliminate transfer at junction points, thus cutting down wagon detention, and the expense to shippers of the labor and damage due to transfers. Furthermore, the rules will reduce a certain amount of empty haul, for they permit of the equalization of wagon supply by the delivery of equivalent

capacity rather than of the particular wagon, provided that no wagon is to remain away from its " home " line more than 12 days. The interchange records are to be kept by the Clearing House in the Ministry of Communications, and settlements between the different lines will be effected through the same bureau.

In a supplementary session, the Traffic Managers drew up a uniform classification of goods to be followed for through traffic purposes. This is a work of considerable moment, for up to the present, each line had devised its own classification. It is understood that the new classification is much further refined and more complete than any of the former classifications. Whereas no line in the past had recognized more than five hundred commodities in its classification, the through classification lists at least fifteen hundred. In America, under private ownership, the work of harmonizing the classifications made by individual lines was attempted so late that to date it has not been accomplished. Although a great deal has been done, three major classifications remain, and practical men have almost despaired of finally reducing these three to one. China is to be congratulated that the diverse private interests upon her railways have been brought together for the common good at this early stage of her railway history.

It is understood that plans are being made for the through-billing of goods beginning in 1921. That is, if one has a shipment at Kalgan destined to Pukow, he may load it upon a wagon at Kalgan, pay the freight charges for the entire trip in advance, and have the wagon moved direct from Kalgan to Pukow. This is the practice in all other countries having a standard gauge, but has not been possible in China. It will probably be necessary for some time yet to send a servant along with the cargo to pay *likin* charges and to protect the shipment from theft. But ways and means will be found in time to avoid this, after the preliminary work has been done. For example, on the Shanghai-Nanking line at present, there are two tariffs offered to the public, one for shipment at railway risk and the other for shipment at owner's risk. Naturally where the railway assumes the entire risk, it charges a higher rate. But the public has found the service upon that line to be so reliable and free from pilferers, that practically all the traffic now moves at owners' risk. No doubt the time will come soon when this can be done in other parts of China. Also, several of the lines have arrangements with the *likin* authorities whereby they pay a lump sum in lieu of the *likin* tax upon the goods which they carry. This sum is in effect added to the rates charged, but like any indirect tax, is not noticed, and traffic is stimulated by the freedom from *likin* interference. This doubtless can be effected in the case of through traffic. Only when it is possible to ship a crate of goods from one point in China to any other point within its borders by the mere offering of it, with the necessary freight charges, at the point of origin, will China have a satisfactory railway service. And it is this end toward which two long steps have been taken in 1919.



Map showing Through Railway Route between China and Japan

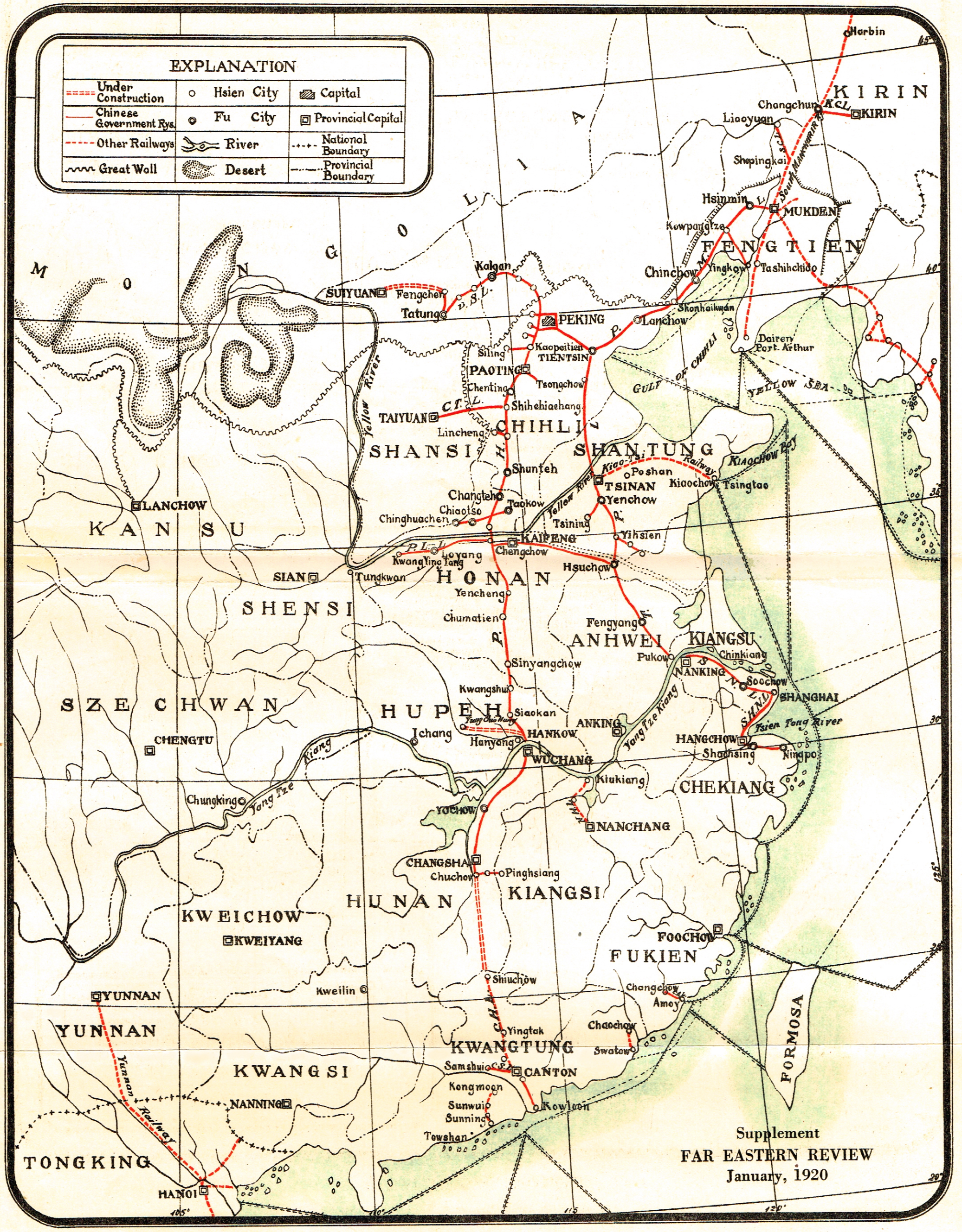
One of the most serious obstacles to the unrestricted through shipment of goods and the common use of goods wagons, is the prevalence of so many different designs of wagons, each necessitating different standards of repair, and made up of parts which are entirely different in form from similar parts of other wagons. This makes it necessary to keep a wagon close to its " home " line, in order that it may be repaired. It would be possible to keep duplicate sets of repair parts for each type of wagon upon the Government lines at each repair station. But this would necessitate a very heavy investment in such stores. Still it is feasible and is just what American railways have done to a considerable extent. But it is well known that the use of varying types reduces the efficiency of workmen in making repairs, especially the quality of the work done in repair. Hence to date, this has been considered an insuperable objection to wide interchange of rolling stock.

In order to correct this situation if possible, the Ministry of Communications has constituted a Commission on Railway Technics, which has been studying the situation for perhaps two years. This Commission has prepared designs for goods wagons which will be submitted to the mechanical officials of the several lines for criticism and adoption at an early date. To assist in making this standard as practicable as possible and to insure that no interest is denied full consideration a group of technical advisers has been engaged abroad, and these gentlemen have arrived in Peking. One of these, Mr.

MAP OF CHINESE GOVERNMENT RAILWAYS

PREPARED BY THE DEPARTMENT OF RAILWAYS

MINISTRY OF COMMUNICATIONS.



Supplement
FAR EASTERN REVIEW
January, 1920

T. R. Johnson, is an engineer of note, with long experience upon the railways of Australia and England. Another, Mr. Frank H. Clark, was for many years, General Superintendent of Motive Power upon the Baltimore and Ohio, the pioneer railway of America. Monsieur Taton, a professor in the Surbonne, and a mechanical engineer of note will bring to the Commission French experience. Dr. Hirai, at present Adviser to the Ministry of Communications, will bring Japanese experience.

While no official announcement has been made of plans or intentions, the common talk in Government service is that not only will rolling stock, but also signalling, roadway structures, and similar features of the service come under the purview of the Railway Technics Commission and its Advisers, to the end that the entire railway service shall be made of one standard. The procedure followed will be similar to that adopted in standardizing the accounts. That is, representatives from the different lines will meet with representatives of the Ministry and act as a legislative body. The Advisers will sit with these members and out of their experience and skill assist in reconciling the points of difference. Naturally, there will be many of these, and considerable compromise will probably result. The final conclusions will then be laid before the Minister for approval or disapproval. If approved, they become regulations, with much the same force as law.

No account of the year would be complete which did not mention the heated discussion during the early months upon the subject of "Unification." Many insisted upon using the term "Internationalization," and the emphasis upon this phase did more than any other part of the discussion to put the subject into the discard. Briefly the informal proposal was to invite the Consortium financiers to appoint a board of technical experts to assist the Ministry of Communications in administering the railways of China, provided that at the same time the Consortium group should furnish the funds and their governments should lend them sufficient political support to redeem the lines of railway now under complete foreign control, such as the Chinese Eastern, The South Manchuria, the Shantung, and the Yunnan lines. Two aims were in the minds of the promoters of the idea, (1) the recovery of undisputed control over the regions served by these lines, and (2) the complete amalgamation of all the existing lines together with lines yet to be built into a well integrated system. It was felt that the commercial future of China would be so much more attractive to the commercial nations under such conditions, that there would be some hope of securing their support to the program, which would be so advantageous to China politically. However, interests who were particularly interested in defeating China's political aspirations succeeded in making a considerable group possessing power and influence believe that it was merely a cleverly concocted scheme to wrest administration from Chinese officials, and the Government failed to adopt any positive attitude upon the question. Very soon after, came the stunning news that the Peace Conference had completely ignored all of China's claims for consideration, and the sentiment quickly arose that no administrative power of any sort is safe in any but purely Chinese hands. But there was doubtless a quickening of the feeling that China herself must make greater progress along the path of internal improvement, if she is to preserve any part of her national heritage. The presence of the Technical Advisers is an indication that China herself will push "unification" work, and thereby eliminate any further excuse for foreign interference. If this conclusion be correct, the "unification movement" has served a very useful purpose regardless of the personal animosities created, and the disappointment which many well-wishers of China feel over its apparently fruitless ending.

Scheme of Motor Highways, Canal and River Dredging for Shantung Province

General Chu Yin-kwang, the progressive Civil Governor of Shantung Province, has before the Provincial Assembly of Shantung Province a comprehensive scheme for motor highways, and a great dredging proposition calculated to give Tsinanfu, the Capital of the Province, direct connexion with the sea. The latter is the improvement of the Siaochingho, an old canal, by dredging, widening, etc., to enable it to give navigating facilities for small steamers. It is interesting to note that the scheme was once a favorite one with Japanese, who, during the time of the German occupation of Tsingtao, desired to have a port at Lungkow and direct communication with Tsinan as a means of giving them facilities for developing from Dalny an economic footing in the Province. In the FAR EASTERN REVIEW of November, 1914, Mr. George Bronson Rea went into this question in some detail, and estimated that the cost of making the waterway fit for navigation by vessels having a maximum displacement of 1,500 tons and a draft of 20 feet and providing locks, and port facilities at the mouth, would be something like $15,000,000 silver dollars, if the excavation is done by native labor. By modern machinery, dredgers, etc., he estimated that the price would be reduced—as well as the time of construction—to something like $10,800,000.

Whereas this plan was advocated by the Japanese to suit their own economic purposes, the Chinese are now planning to go ahead with the enterprise to meet their own needs, and surveys have already been completed. In a later issue we will go into the matter in more detail.

So far as motor highways are concerned General Chu contemplates linking up all the principal district and other cities, and looks forward to being able within three years' to ride in an automobile through 107 districts in a couple of days. His scheme is to build a properly constructed main road between one district and another and to connect up important cities with branch roads.

A Bureau for the undertaking of this work is now being formed, and when the Provincial Assembly approves the scheme and passes the necessary appropriation. surveys will be undertaken and construction work commenced.

Already the Governor is having the streets in Tsinanfu widened and macadamized, and a new road is being built round the city. Adjacent old roads are about to be repaired or rebuilt, and where necessary new ones will be constructed.

He also intends to have the Yellow River in Shantung attended to and dredged where possible. One of his plans is to have a port developed at Lukow, on the Yellow River, near the great steel bridge which carries the railway from Tsinanfu to Tientsin and Peking. At this spot—which is connected by a spur to the main railroad—a large junk traffic is already handled. The scheme is to deepen the river and establish the necessary improvements to make it a center for small steamboat traffic. The Yellow River is a big problem, as is also the improvement of the Siaochingho, but Governor Chu is confident that the wherewithal can be found to undertake the work that is necessary. The Siaochingho will have attention before the Yellow River, and work upon it will, he hopes, be started simultaneously with the building of a co-ordinated system of motor highways.

[See under "Engineering, Financial, Industrial and Commercial News" for references to other motor road schemes in China.]

Mr. Wang Ching-hui, who is one of the early revolutionists, and is famous first, for attempting to assassinate the old Prince Regent, second for having survivied the horrors of Manchu imprisonment, and third for resisting all offers of office under the Republic, is busy lecturing his countrymen in South China on the necessity and importance of industrial development. He claims that industrial development will solve the pressing political and economic situation. He advocates that foreign assistance be secured in the shape of machinery and productive commodities rather than in loans. The latter are mostly squandered, he says, while machinery can be used for the profitable development of private and public enterprises.

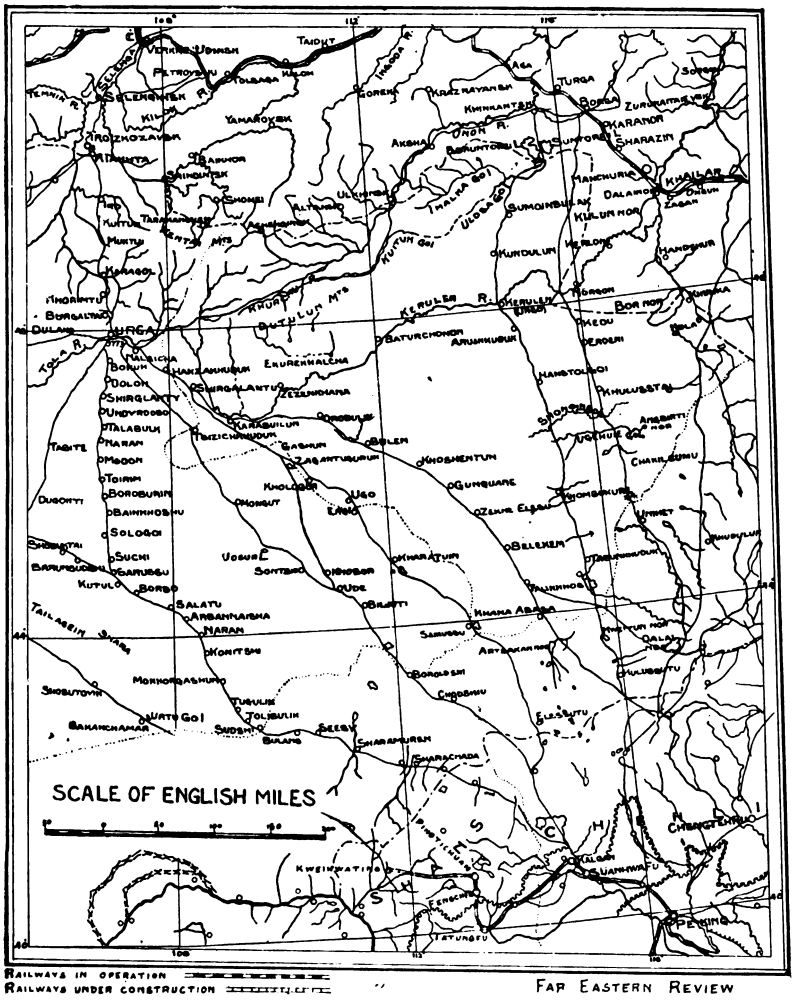
Peking-Urga Railway Project Revived

ACCORDING to statements made in a responsible quarter in Peking the Government has determined upon an extension of the Peking-Suiyuan Railway from its present terminus at Fengchen to Urga, the capital of Mongolia. Surveys are to be begun in the spring and a Presidential Mandate is expected shortly appointing General Tinge Shih-yuan Director of the Peking - Suiyuan-Urga Railway. General Tinge is at present director of the Peking-Suiyuan line, a description of which appeared in the FAR EASTERN REVIEW, November, 1919.

Now that the autonomy of Mongolia has been cancelled and that territory once more comes under the direct jurisdiction of Peking it is only natural that consideration should be given to the building of a railway in order effectively to control it. During the past year serious efforts have been made to establish closer relations with Urga by the utilization of motor cars. Many cars were used during the year, but owing to defective organization, reckless driving by unskilled Chinese, and the absence of proper repair shops the service was found to be anything but profitable. So far as the Government officials are concerned they decided to discontinue the service with the arrival of the cold weather, when motor transport over the plateau automatically ceased. The experiment taught them that only with good roads, good mechanics and drivers, regular stations at intervals across the Gobi, and elaborate organization, could a motor service succeed, and this would cost so much that they turned their attention once again to railway connection.

The return of Mongolia to the national fold has undoubtedly revived the desire for a railway for military purposes if not for commerce and colonization, and it will not be surprising if a start is made with a survey early next year though money is tight. There are observers of developments in this territory who aver that Japan will be only too ready to supply the necessary capital, it being believed that Japan is particularly interested in the movement which has culminated in the cancellation of Mongolian autonomy.

A railway will be a distinct advantage inasmuch as it will open a large tract of splendid grazing land, as well as afford a shorter route to Europe if it is continued from Urga to Kiachta and on to the Siberian railway at Verkne-Udinsk. It has been estimated that such a line will reduce the distance by rail to Europe by some 600 miles, while the time for the journey from Peking to London would be cut down to nine and a half days. The project is not a new one. In the past Russia made several attempts to have this line built with her own Imperial desires in view, but China would not become a consenting party. However, Mr. Alfred Sze, present Chinese Minister in London, when Minister of Communications in 1912 recommended the building of the line with Chinese capital as far as Urga, naming Tls. 100,000,000 as the probable cost. His idea was to have the line built as a private one by private Chinese investors, but the proposal did not mature owing probably to the disturbed state of the country following the overthrow of the Manchu Dynasty, and the subsequent internal turmoil due to the differences between the politicians and militarists of the North and South. General Hsu Shu-cheng is now said to be arranging for a domestic loan to carry on the work.



MAP OF SECTION OF MONGOLIA SHOWING POSITIONS OF PEKING AND URGA.

On this map is shown the existing railway between Peking and Fengchen. At present construction work is under way as far as Pingtichuan. If an extension is made to Urga the line will take off either at Pingtichuan or from some point between there and Kweihwating (also spelt Kueihuacheng). A line to connect Peking and Chengtehfu, commonly known as Jehol, and which is shown on the map, is also being talked of in official circles at Peking. The Japanese already hold the right to build a line from Chengtehfu northwards to Taonan.

Railway System with Shanghai as Terminal

Noted Engineer Urges Definite Policy in China's National Transportation System—Railways, Roads, Waterways and Ports

AT a meeting of the Engineering Society of China Mr. H von Heidenstam, Engineer-in-chief of the Whangpoo Conservancy Board, read a brief paper as an introduction to a discussion on Shanghai as an industrial and commercial metropolis.

Following an explanation showing how the question had arisen in connection with the investigation of the problem of improving the Shanghai Harbor, and mentioning that while the Whangpoo Conservancy might be expected to solve the technical features of the harbor question there were many other questions on which Shanghai's future depends, he said:

"The average Shanghailander, whether Chinese or foreign, has had no particular inducement or encouragement to think of Shanghai as a whole or of its future, and his motto is as often as not *apres nous le deluge*. He thinks of, or at least acts only for, his own particular business, and if confronted with larger issues, has that very natural inclination to shrink from them. The foreign trader considers himself generally, and with perfect right, as a passing guest. The Chinese resident in the foreign settlements lives as a guest in his own country because it suits his particular purposes, while the Chinese in the city and suburban areas profit by the proximity of the settlements and add to its importance but have not worked, so far, for the development of the whole on sound lines.

"Shanghai now begins to compare with the big centres of Europe or America with their complicated and highly organized forms of life and administration.

"The difficulty is that Shanghai as a whole is not organized for tackling any big problem. On the contrary, there are two foreign settlements, of which one is international, and at least two Chinese administrative areas. This has, of necessity, produced a multiplication of all public services and administrations, which complicates all issues and renders the final ideal of a large unified Shanghai, with an equally good government as the Settlements now have, very difficult of attainment.

Shanghai, a Model City for Chinese

"Is a greater Shanghai in every sense of the word possible? That is the question before us.

"Shanghai can, however, become really great only by being not only two model foreign settlements, but also a model Chinese city for Chinese, which at the same time is a suitable place for foreigners.

"If the foreigners want to work on sound lines, it is necessary for them gradually to enlist and awaken Chinese sympathy and support for the future of Shanghai. This should not prove so difficult if a wise policy is adopted. As long as the 'settlemental' development is so conducted that it will provide model administration, protection, trade-profit and western 'wisdom' for the Chinese, they will flock to Shanghai. To assure, however, active Chinese support and co-operation, if it is at all possible, it is necessary to devise some line of development, providing for such co-operation, with the aim of finally merging all of Shanghai into one unified community at least in certain respects.

"What is done to benefit Shanghai as a great future centre will also ultimately benefit China, and the Chinese, and if the Chinese do not look upon it in that light, they should be educated to do so.

"As a small step in the right direction the writer would propose that in all public schools in Shanghai, courses in 'municipal government' should be given.

"Improved labor conditions may prove necessary if the supply of labor and its quality should be kept up to the high figures required for an industrial metropolis. The social and economical revolution, in the throes of which the world is now suffering, will have its aftermath also here—and it is as well to realize it in time.

Transportation Policy Wanted

"China needs a definite policy in the national transportation system, roads, railways, waterways and ports, avoiding unnecessary competing lines and ports and development on rational not on political lines.

"In this connection, in the unification schemes which figure in both the Government programs and the Consortium schemes, the scrapping of some of the projected lines, which are in unnecessary competition with others and with existing good water routes, or are directed towards unsuitable ports, should only be for the general good. There would be no selfishness on the part of Shanghai in suggesting that the whole railway net of Central and North China be so modified that the traffic will converge to and diverge from the principal port. It is up to the interests of Shanghai who desire its future development, to further and influence a national railway policy with the chief ocean terminal of the country at Shanghai."

As to industrial development, Shanghai is already *a fait accompli*, but can it develop and maintain its lead? It is on these subjects the speaker especially suggested that the various experts, who are members of the Society, should come forward each in their own line and cast the horoscope.

Industrial and Construction Questions

What about the supply of fuel for power supply, heating and ships (coal and oil)? How is Shanghai to get cheapest supplies and to make itself independent of other countries? How much coal and oil will be needed? How are the general conditions for industries in Shanghai as compared with other centres?

What about food supply? How is the situation as to building materials, cement, stone, glass, etc., etc.? Can cement be locally made? Can one build a real sky-scraper on the bund?

From where will the iron and metals be derived? Can structural steel be made in Shanghai?

What are the chances of supply of timber from Japanese, Chinese, American and Russian sources? What can North China supply?

What about the general financial and economical institutions and measures required to lead and support the industries?

The speaker urged the various local experts to indicate the possibilities of development and remarked that their efforts could be greatly increased by a general agreement. He concluded by noticing the special demand for education and research in Shanghai. A schedule of the suggested technical questions in relation to Shanghai development was circulated as an appendix to the paper.

An interesting discussion followed the reading of the paper which was closely followed by a large meeting. The proceedings closed with a hearty vote of thanks to the author.

Engineering, Financial, Industrial and Commercial News

RAILWAYS

New Japanese Railway Loan.—Through the indefatigable efforts of the Japanese railway authorities, it is reported, the consent of the Finance Department was finally obtained at a Cabinet Council on December 9 for the issue of railway loans, amounting to Y.100,000,000, for the fiscal year. The total amount of the Railway Budget for the next fiscal year is said to have been fixed at Y.170,000,000. Of the total sum, the expenditure of Y.70,000,000 will be met by the increased revenue resulting from the projected advance in passenger fares and other resources.

Steamers to Connect with Shantung Roads.—The Japanese Imperial Railway Board has made an announcement relating to the arrangements made for the connection of the railway service between the Imperial Railways and the Shantung railway. The junction is to be made through the ships of the Nippon Yusen Kaisha, the Osaka Shosen Kaisha and the Harata Kisen Kaisha. The new arrangements will come into force on January 1.

Lunghai Loan.—The Chinese Government has sanctioned the continuation of negotiations with Belgian capitalists with regard to the Lunghai Railway loan, which have been suspended on account of the war.

Taoching Railway Extension.—According to the Japanese newspaper printed in Chinese at Peking the loan for the extension the Tao-ching Railway to Menghsien is for the construction of a branch line from Chinghua to Menghsien, being the forerunner of an extension of the line to Pingyang in Shansi from Chinghua. According to the journal, the loan is £350,000, interest at 7½ per cent. per annum. It is secured by the guarantee of the Chinese Government and the entire property of the railway. In case the revenue of the railway to be constructed is insufficient to pay the capital and interest, the Fu-Chung Corporation shall make the deficiency good by deducting the amount from the freightage on coal to be paid to the Chinese Government. The capital is to be amortized in 3 years after it is opened to traffic. The agreement was signed on October 30, 1919.

Overhead Railway for Kobe.—The Japanese Imperial Railway Board has decided to erect a quadruple overhead line from Nada to Takatori Station with an 18-foot road on both sides of the line. The height of the line will be from 18 feet to 15 feet, the former where tram-cars pass underneath. It has been decided that the extension sections of the Hanshin Electric and the Hanshin Kyuko lines shall be low-level, the Kyuko line being allowed to have a station at Kano-cho, Kobe.

South China Railway Scheme.—The Canton Military Government has despatched a circular telegram to the provinces explaining the scheme which was formulated at a political meeting to establish a Union Bureau for the railways of eight Southern provinces. General Tsen Chun-hsuan will be elected Director of the Bureau and the provincial authorities will be the Vice-Directors. At a meeting of the Canton Administrative Council recently it was decided to create a directorate for the building of railroads in the South-western provinces, with Mr. Tsen Chun-hsuan as the chief director and the military and civil governors of the various provinces as associate directors. The plan for the development of railway construction takes in eight provinces which are entirely or partially under the control of the Constitutionalist forces, they are Szechuan, Yunnan, Kweichow, Shensi, Fukien, Hunan, Kwangtung and Kwangsi.

Purchase of Rolling Stock.—According to the "Shuntien Shihpao" the Peking Department of Communications concluded a loan with the British and Chinese Corporation, which having been submitted to the Cabinet meeting held on November 27 was duly approved. The amount is two million dollars bearing annual interest at eight per cent. The principal is to be repaid in monthly installments of $100,000, commencing from December, 1920. The loan is secured by the surplus profit of the Kin-Han Railway. The proceeds, says the Peking daily, will be used for the purchase of 12 railway engines, 90 goods cars, and for the improvement of the Canton-Hunan Section of the Canton-Hankow Railway.

Ningpo Railway.—It is reported that steps are being taken to resume work on the Shaohsing section of the Shanghai-Hangchow-Ningpo Railway. For five years not a sod has been turned between Hangchow and Dzaongo. The raised mud track for six or seven miles on this side of the Dzaongo River was thrown up and the two banks and one mid-river concrete pillar for the railway bridge across the Dzaongo River were constructed before the war and have remained at a stand-still ever since. The bridge is to be a two-span one. The track between Dzaongo and Ningpo, however, has been improved considerably. The stones forming it, previously about the size of ostrich eggs, have been broken as small as hen's eggs. Moreover the stations and buildings have been improved.

Chinese Eastern Railway Representative.—Dr. Yen Teh-ching, Chinese representative on the Chinese eastern railway, has left Harbin for his post of Managing Director of the Canton-Hankow line at Hankow. The Peking Government has selected Dr. C. C. Wong, former director of the Peking-Hankow railway, as his successor. Dr. Wong has just returned from his railway investigations in Europe.

Freight Rates on Chinese Eastern Railway.—The Allied Technical Board has resolved that rates on the Chinese Eastern Railway should be based on the gold standard. The Board further resolved to fix the same rate for Romanoff, Russo-Asiatic Bank and green Karensky notes, which means unification of all notes, and a change is to be made, therefore, in the present rate of Romanoff notes compared with gold notes. Instead of being ten Romanoffs to one gold note it will be sixty, which was the rate previously fixed for green Karenskys. Twenty-five per cent. of the amount charged for freight will be paid in small Romanoff notes, which will secure for the railway a sufficient supply of these notes to meet current expenses and salaries. There is a certain amount of opposition on the part of the Chinese authorities, but it is hoped to overcome this in the near future with general satisfaction. The Chinese Government wired to Mr. Li Cha-kao, the Chinese delegate to Siberia, to the effect that as the Chinese Eastern Railway is entirely in Chinese territory it cannot be considered in the same light as the Siberian Railway. Should the Powers take the same measures to maintain the Chinese Eastern Railway as the Siberian Railway the delegate is instructed to make careful explanations on behalf of the Government, and take strong measures to protect the rights of China.

General Hsu Shu-tseng (Little Hsu) proposes the issue of a large domestic loan to cover the cost of the extension of the Peking-Suiyuan Railway to Urga. It is stated, says Reuter's Peking correspondent, that he is arranging that Japanese funds shall participate in the loan.

Akashi Electric Line Extension.—The proposed extension of the Akashi Electric line to Minatogawa has been rejected, in anticipation of its municipalisation at the time of the contemplated annexation of Suma to the city of Kobe.

New Lung-hai Railway Director.—The Ministry of Communications has appointed Mr. Li Ta-show as Director of the Lung-hai railway, in succession to Mr. Sze Chow-tseng, who is being sent on a mission to Europe. Mr. Li Ta-show has been General Administrator of the Peking-Hankow railway for some years.

Hankow-Szechuan Railway.—According to a Japanese report the Hankow-Szechuan Railway has signed a loan agreement for $1,000.000 with a certain British syndicate. The Loan is a short term one and the money has already been paid over. The terms of the loan are not stated.

Japan Utilises Shantung Railways.—A through traffic service for passengers and their baggage between Shantung and Japan over three different lines, namely, the Imperial Government Railways of Japan, the steamer lines between Sannoyima (Kobe) and of Moji to Tsingtau, and the Shantung Railways, has been arranged to begin on January 1. The available period of the through tickets is fixed at 30 days, including the day of issue, and the steamer connection for both passengers and baggage is to be made at Sannomiya, Moji and Tsingtau.

TRAMWAYS

Projected Tramway at Canton.—The Kwangtung Tramway Company, which holds the franchise for the building of a tramway at Canton, had its share subscription books open till December 31, 1919. The books were originally to have closed at the end of October. Mr. J. P. Hing, representative of the Company, is on his way to America to make arrangements for the purchase of the plant. The capital required is $5.500,000, which appears to be slow in coming in, though it was announced that over $2.000,000 had been subscribed in November by Canton and Hongkong Chinese capitalists.

FEBRUARY, 1920 VOL. XVI. No. 2

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

遠東時報

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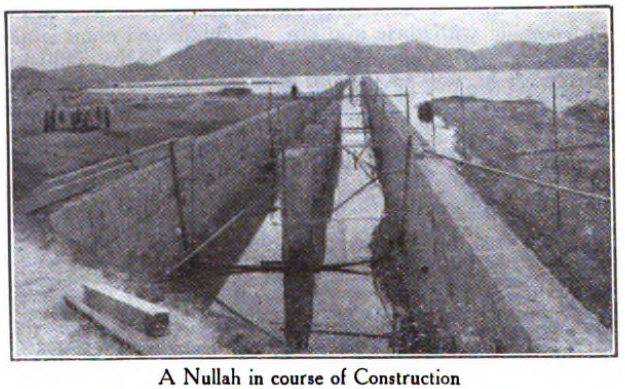
Reclamation in Hongkong

(From Our Hongkong Correspondent)

THE most important question demanding solution in the Colony of Hongkong is that connected with housing. The steady growth of the Colony's population—a growth which has gone on since the early days of the British occupation—and the limited area of land available on the island of Hongkong, have created conditions which have caused severe hardships to those who wish to set up homes and businesses.

There has always been a scarcity of level land in the Colony, and this scarcity has made it necessary for a large amount of reclamation to be done. As early as 1851, that is, only ten years after the Colony's occupation, efforts to reclaim shallows from the sea commenced, 8½ acres being filled in between Wilmer Street and Bonham Strand West. The East Praya was reclaimed in 1873, and in the year 1884, 23 acres were added at Causeway Bay. In 1886 an area of 22 acres was reclaimed at Kennedy Town. Since that time the largest of the Colony's reclamations—the Praya—has been completed, thus adding another 65 acres to meet the land requirements of the Colony.

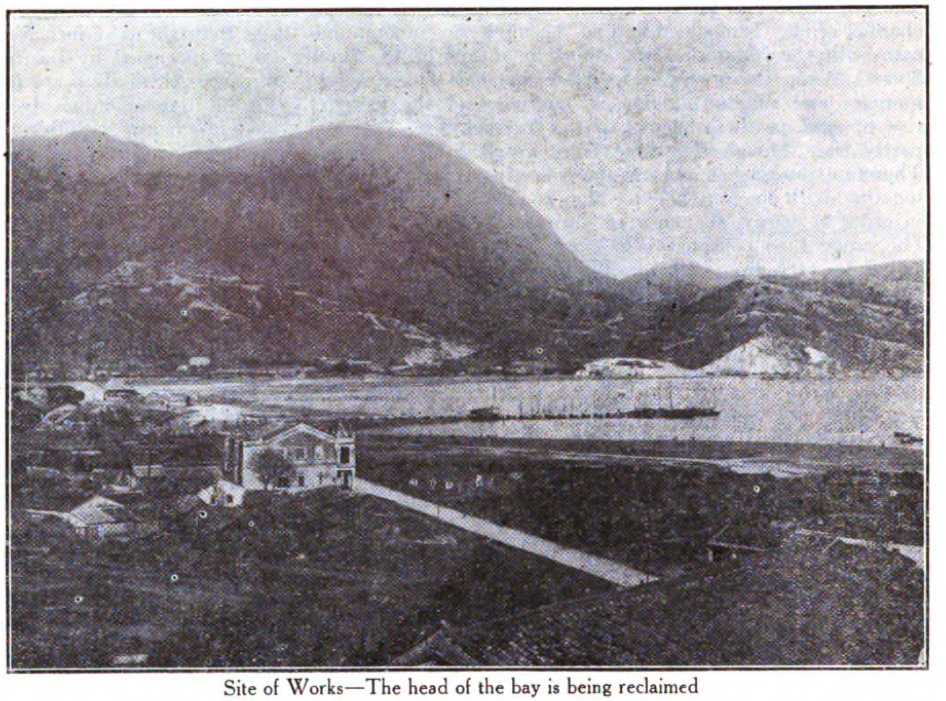
The need for space can be easily appreciated when it is remembered that every part of the building ground on this large area was covered with houses almost as soon as it was completed. Yet, in spite of all these reclamations and the rapid development of the Kowloon Peninsula as a residential area, the great problem remains unsolved. In some districts the overcrowding exceeds that in some of the slum parts of some of the world's great cities.



A Nullah in course of Construction

Across the harbor, at Kowloon Bay, there is now in progress the greatest work of reclamation yet attempted in the history of the Colony. This scheme is being carried out by the Kai Tack Land Investment Company. It was first conceived by Dr. Wu Ting-fang, the famous Chinese diplomat, and was fostered by the late Sir Kai Ho-kai, C.M.G.

Recently, by the kindness of Messrs. Little, Adams, and Wood, Architects, the writer was taken over the district to see the progress that has been made and to see something of the great work which has yet to be done. The reclamation extends across the whole head of Kowloon Bay and covers an area of 230 acres. The contract for the first portion amounted to one and three-quarter million dollars. The Praya—or waterfront—will be over one and a half miles in length and there will be piers at which ocean-going steamers can be berthed at low tide.



Site of Works—The head of the bay is being reclaimed

The Praya is to be 175 feet wide, and the main central thoroughfare 100 feet in width. All the other roads intersecting the Settlement will be 50 feet wide. The Praya and the main central thoroughfare are to be lined with trees. A service of well-appointed ferry boats is to run to and from Hongkong island with stations at West Point, Quarry Bay, and Shaukiwan. An area of four acres is being laid out as a recreation ground.

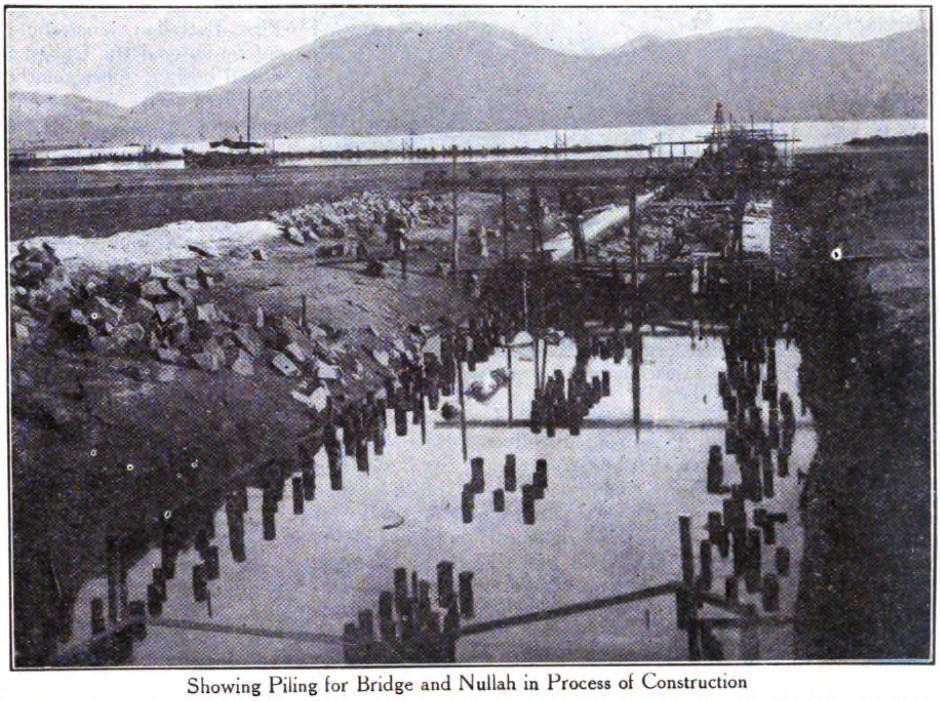
The site is undoubtedly the most suitable for such a Settlement out of the island of Hongkong. It is situated at the head of a great sheltered bay, which at present is the refuge for the bulk of the shipping in the harbor when typhoons are our unwelcome visitors. Behind the Settlement are high hills—bearing familiar landmarks such as the Lion's Head—which in winter will give shelter from all the cold winds, while in the summer it will be open to all the cool breezes which blow across the har-

bor. As a residential district the site will be ideal.

Mr. F. R. J. Adams, of the firm of civil engineers and architects already mentioned, under whose personal supervision the work is being done, says that the drainage on the reclaimed land will be an important feature. He pointed out the splendid nullahs—or waterways—which have been designed and are being made for the purpose of thoroughly draining all the back areas between the reclamation and the hills to the north. There are four nullahs—which will be the biggest in the Colony—each having a width of 36 feet, and these run through the Settlement. These nullahs have roads 40 feet wide on either side thus giving a total width of 116 feet. The nullahs are to be spanned by thirty or forty reinforced concrete bridges. The main front road or bund will be 175 feet in width and the main central road will be 100 feet wide. There will be other roads intersecting the Settlement 50 feet wide.

An important thing to note about the whole undertaking is that it is an exclusively Chinese enterprise. The primary object is to create a residential suburb where wealthy Chinese will be able to live in peace and comfort. With such an object in view it is certain to be popular, for the Chinese, no matter where on the earth's surface they may wander to, always come back, if it is at all possible, to their own land. With the wealthy Chinese this modern city of the future will be a goal for "*otium cum dignitate*." So that at present in the reclamation of Kowloon Bay we have the making of the foundation of a new township, one to which the Chinese are sure to flock. There will be plenty of room, for marked off on the plan are forty-seven sites, each of these occupying an area of from 179,999 to 200,000 sq. feet. So it will be seen there is room for residences of quite palatial dimensions with the necessary gardens.

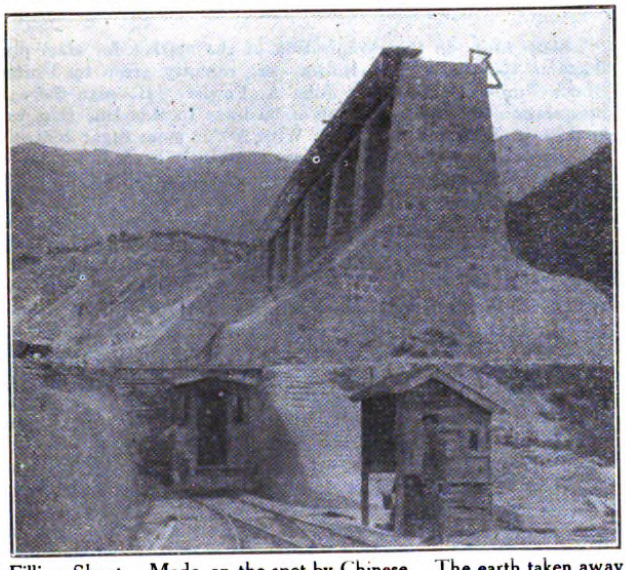
Another point which will count for much with the Chinese is that the "*fung shui*," of the place is good. On the one side are the sacred rocks with the historic and famous Sung stone among them, and in the rear is the Lion's Head on the hills.



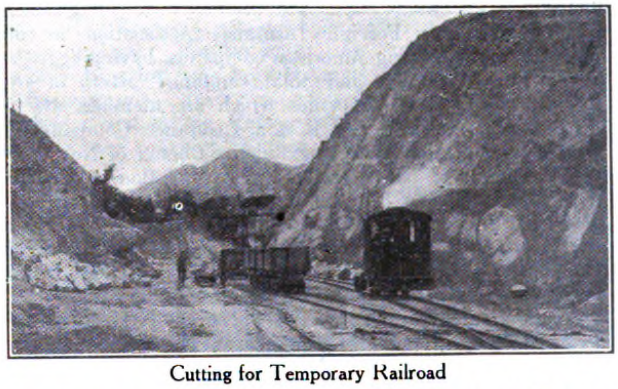
Showing Piling for Bridge and Nullah in Process of Construction

At the rear of the Settlement the promoters have reservations on lands which may at some future time be used for industrial works, and as the Crown lease allows the use of land for factories or godowns for storing coal, applications are already coming in.

Another advantage is that a larger area of level land is still available to the north of the reclamation and of the Custom's Pass, or Saikong Road, over the ground now embracing the villages of Pakuktsai and Ngauchiwan, around Hammer Hill, and the villages of Shatiunling, Ngaiutau, Pokong, Pakhang and Ngatsinwan to Kowloon City, most of which is now occupied for cultivation.

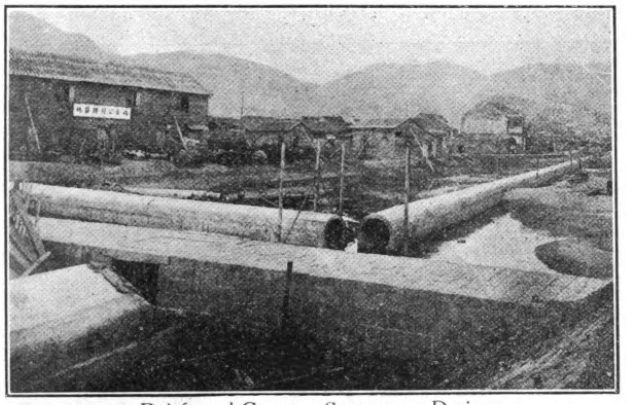


Filling Shoot. Made on the spot by Chinese. The earth taken away here is used elsewhere for filling in



Cutting for Temporary Railroad

A regular army of Chinese workmen is at present engaged on the work of reclamation but a still greater army will be needed ere the work is finished. Near the Taiwan Glass Factory is a quarry from which splendid granite, used in the foundations, is obtained. The sea-wall is also made from the same.



Reinforced Concrete Stormwater Drains

A locomotive shed stands on the land so far reclaimed, and small railway lines run in all directions. Small engines are busy pulling heavy truck loads, the trucks, it is interesting to note, having been made by Chinese labor on the site. The East section of the area is now reclaimed and is ready for building on this year. The whole scheme is to be completed in five years. The work is a great undertaking but there is ample scope for such in the New Territory, and we cannot doubt that further development in this direction is assured.

American Foreign Insurance Association to Enter China

The American Foreign Insurance Association is now making active progress in carrying out the plans for the establishment of the American fire and marine insurance companies in the foreign field. Announcement was made recently of the appointment of Allen W. Hexamer as marine manager for the republic of China. He will have his headquarters at Shanghai.

The American Foreign Insurance Association is composed of twenty strong American companies having aggregate capital of $50,250,000 and total combined assets of over $387,000,000. The companies which are members are the American of Newark, the Boston Insurance Company, the Continental of New York, the Fidelity-Phenix of New York, the Firemen's of Newark, the Fire Association of Philadelphia, the Fireman's Fund of San Francisco, the Glens Falls of Glens Falls, N. Y.; the Great American of New York, the Hartford Fire of Hartford, the Home of New York, the Insurance Company of North America, the National of Hartford, the New Hampshire Fire of Manchester, N. H.; the Niagara Fire of New York, the Phoenix of Hartford, the Providence-Washington of Providence, the Springfield Fire and Marine of Springfield, the St. Paul Fire and Marine, and the Westchester of New York.

Mr. Hexamer, who has just been appointed marine manager for China, is at present marine manager for Fred S. James & Co., and has resigned that position as of December 1. He started in the marine insurance business in September, 1910, with Mather & Co., in average adjusting. In October, 1913, he went with Edgerton Parsons as manager of the loss department and continued with the succeeding firm of Parsons and Eggert until October, 1914, when he entered the brokerage end of the business, handling all classes of marine business. He joined the Fred S. James & Co. office on March 1, 1919, as marine department manager.

Mr. Hexamer has been a member of the Naval Militia, First Battalion, since June, 1912, and when the war broke out he entered the United States active service as a commissioned ensign, subsequently becoming senior lieutenant. He served in active duty doing convoy on the U.S.S. *Louisiana* and later saw service in the Bay of Biscay, English Channel and North Sea. In December last he was detached and went on duty with the salvage section of the Bureau of Construction and Repairs. He was ordered to inactive duty February 28, 1919, and immediately returned to the marine underwriting field, joining the James office.

He has had a wide range of experience and is generally looked upon as a capable man well qualified for the important post for which he has just been selected by the American Foreign Insurance Association. He is a member of the Marine Insurance Club, the New York Athletic Club and the Association of Average Adjusters. He will make his headquarters in Shanghai, but will be called upon to travel extensively among the principal ports of China while establishing the association in this country, where it will write marine, inland marine and fire risks. Mr. Hexamer is not entirely unfamiliar with the Far East, having already been in the Philippines and Japan.

The American Foreign Insurance Association has already established connections in Australia, New Zealand, Argentina, Brazil, Chili, Colombia, Japan, China and the Philippine Islands.

How to Sell Steel Products in the Dutch East Indies

Some hints on the exploitation of the market for steel products in the Dutch East Indies were recently given by United States Trade Commissioner John A. Fowler. He says there is no question about the amount of business in this line that can be done in Java and Sumatra. With 200 or more sugar centrals, thousands of miles of light rails are constantly needed, and under the present plans of the Dutch East Indian Government 10,000 miles of railroads will eventually be built. Government work planned during the next four years will alone require 45,000 tons of cast-iron piping, to say nothing of the private needs of oil companies for pipe lines, and the demand for reinforcing material in concrete construction work. As soon as conditions become somewhat normal, new mining ventures will be opened up in what is potentially a great mining country, and the supply of machinery for this work will come entirely from abroad.

Mr. Fowler emphasises that there are opportunities for firms to get into business on a basis of service rather than price, as adopted by the Germans, who kept a stock of material, and engineers ready to sell any quantity of rails laid in the field and equipped with all the rolling stock required. The only practical manner in which new machinery can be introduced, writes Mr. Fowler, is to give the factory some guarantee of satisfactory results and back up the guarantee by placing an expert on the job to see that the natives operating the machinery learn to run it with the required skill. The type of man to do this work must not only be an expert in the mechanical phases of his machine but also an expert in the handling of men, particularly the native workmen.

Railway Bridge Floors

It is of interest to engineers in China to note that the tendency of American engineers to use longer panel lengths for railway bridges continues to increase. The latest example is that of a double track bridge of 430-ft. span, consisting of 10 panels of 43-ft. The editorial in the latest number of the "Engineering News Record" comments with regard to this type of construction as follows:—Long paneling as used in the Coal Valley bridge of the Monongahela Southern Railroad Company, is in harmony with progressive views in modern railroad-bridge design. The reason for using 43-ft. panels is that the truss is improved by simplification. This means reduction of secondaries and reduction of field connections, two important advantages. They may be gained at the cost of some added metal, but there is at least one auxiliary advantage that helps to counterbalance the loss. The mere increase in weight of the floor is an advantage, by no means negligible, as it produces a solidity very favorable to the suppression of live-load impacts. Since experience has shown plate girders to possess a higher degree of reliability and reserve of strength than is credited to trusses, ultimate economy, doubtless, is on the side of long panels as compared with short panels, even though weight comparison of design may point the other way. On this account it is not impossible, we think, that the same reasons which argue for a moderate increase in panel lengths would also hold for the use of much longer panels, which would involve going to bridge proportions of quite unusual kind. Useful results in this direction, however, are more likely to be reached by progressive development than by a single radical step away from recognized practice. This bridge was designed under the supervision of the Chief Engineer of the Railroad Company and was fabricated and erected by the American Bridge Company.

Investment Assets of Chinese Government Railways

The table below gives the Investment Assets or book value of the property of the Chinese Government Railways. Investments assets include (1) Cost of Road and Equipments, (2) Cost of other Physical Property, and (3) Cost of Non-physical Assets. Other Physical Property refers to property such as land, mills or mines not a part of the operated railways, but which have been paid for out of the sums represented by mortgage bonds, Government investment, and similar capital liabilities. Non-physical Assets consist of stock and bonds of other companies, the purchase price of rights, and similar intangible property. The total of these three groups is the sum upon which a normal annual return must be earned before the property as a business undertaking can be said to have attained the condition of a profit bearing enterprise.

The total cost of Chinese Government railways listed herein, on December 31, 1918, as compiled from the reports of the lines, was $428,401,534.31 From this it appears that the railroads of this country show an average cost of $78,275.19(1) per kilometre of line, or $125,971.39 per mile. This is an increase of $2,761.06 per kilometre of line during the year. Much of this is due to the purchase of National Bonds during the year, but much also is due to the constant addition and betterment which must be made to going concerns. Every line shared in this increase.

Railroad properties are usually of such magnitude, composed of such a variety of parts, and constructed under such dissimilar conditions, that a mere statement of cost conveys little to the mind. It is essential, therefore, that such costs should be expressed in the terms of a known unit of some kind. Length of line is the only kind of unit which has been attempted, but manifestly it is very crude. In the nature of things it makes no allowance for amount or character of excavation or embankment necessary, the length or character of bridges in place, the number, size, or material of buildings, and many other matters which profoundly affect costs. Yet in the hands of those familiar with the conditions surrounding the construction of the railways in question and expert in making allowances for differences, a unit cost per kilometre of line is very enlightening and useful, and to the most casual reader such an average cost obviously discloses the relative burden upon each line which must be discharged before it becomes a commercial success.

It has been almost universal experience that during the first few years in which a railway is open for traffic, it will fall short of earning a normal return. The resulting deficit may be made up in a variety of ways, but in effect it adds to the sum upon which the annual return must be earned. Not infrequently the disparity between net revenues and interest charges is so great during these first years, that interest upon the accumulated deficit mounts faster than revenues from increasing traffic. An ordinary commercial enterprise under such conditions could die a natural death through bankruptcy proceedings. But a government enterprise, in theory at least, is immortal, and the losing race between revenues, and interest charges, in theory, goes on forever, with the gap between them ever widening. It is therefore a subject requiring the highest order of specialized ability to decide, even after the route of a line has been determined, how much can be invested in it. In the case of a line already in operation the program for extension and improvement in some instances may turn upon the same considerations. For this reason, this table of Investment Assets is one of leading importance.

It is worthy of note that the two relatively most unprofitable lines head the list. It may be argued that these are short lines, and for that reason are unprofitable. The point is well taken but emphasizes all the more the low limit which must be imposed on the investment in short lines.

In comparisons like the above, it must be remembered that the character of the construction and the efficiency of the engineering are not the only factors determining the cost of construction. Chinese Railways have been built largely from funds secured abroad. The rate of exchange by which these foreign monies were converted into Chinese currency, obviously has an important effect. The bearing of exchange upon a program of construction must therefore not be overlooked.

INVESTMENT ASSETS OF CHINESE GOVERNMENT RAILWAYS.

Name of Line	Kilometres Owned	Total Capital Investment	Cost per Kilometre
Peking-Hankow	1,305.671	$102,665,955.53	$78,630.80
Peking-Mukden	986.650	69,771,530.14	70,715.58
Tientsin-Pukow	1,106.840	101,437,711.31	91,646.23
Shanghai-Nanking	327.098	30,711,074.71	93,889.52
Shanghai-Hangchow-Ningpo ...	286.398	22,125,378.23	77,253.96
Peking-Suiyuan	490.493	28,956,593.91	59,035.69
Cheng-Tai	242.950	22,137,584.75	91,119.92
Taokow-Chinghua	152.453	7,377,984.47	48,395.14
Kaifeng-Honan	185,000	13,558,555.70	73,289.49
Kirin-Changchun	127.669	6,616,317.76	51,824.00
Chuchow-Pinghsiang	90.500	4,813,836.22	53,191.56
Canton-Kowloon	143.296	15,585,379.13	108,763.53
Canton-Samshui	(Not reported)	—	—
Changchow-Amoy	28,000	2,643,632.45	94,415.44
	5,473.018	$428,401,534.31	$78,275.19

As was pointed out more fully in last issue of this paper the net operating revenues during 1918 amounted to $43,329,537.83, and the surplus for the year $33,505,119.57. This revenue was earned by the carriage of 25,475,379 passengers and 18,551,684 tons, being an increase over 1917 of 41,801 passengers and 1,815,050 tons of freight.

(1)

Country	Capital per kilometre of line	Country	Capital per kilometre of line
Australia ... ...G.	$34,243	South Africa	$30.153
India	28.796	Germany	74,595
Japan	55.074	United States	40,986
Russia	54,939		

Bulletin No. 100 Bureau of Railway Economics.

Commercial Organizations Registered in the Philippine Islands during the Year 1919.

	Number	Capital Stock.	Capital Subscribed.
Extractive Industries	*59*	*P.5,013,800*	*P.2,446,750*
Agriculture	46	3,329,800	2,033,000
Fishing (fish)	1	40,000	21,750
Fishing (pearls)	1	24,000	15,000
Livestock	3	310,000	68,500
Lumbering	6	790,000	201,700
Mining	2	520,000	106,000
Commerce	*90*	*22,560,300*	*6,658,624*
Automobiles, dealers in	1	1,000	500
Building and loan associations	2	35,000	20,100
Commission and brokerage	1	10,000	2,070
Dry goods	1	400,000	400,000
Film exchange	1	30,000	12,575
General merchants	51	10,688,500	4,555,939
Grocery and drug stores	4	120,000	93,210
Hotel and restaurants	1	175,000	35,100
Importers and exporters	6	990,000	170,000
Machinery merchants	2	850,000	225,000
Paper merchants	1	200,000	49,400
Real and personal property dealers	1	10,000	10,800
Shoe merchants	1	250,000	75,000
Tobacco merchants	2	525,000	316,000
Transportation companies	14	10,775,000	592,930
Warehouses	1	500,000	100,000
General Manufacturers	*46*	*10,921,104*	*4,169,264*
Aerated water	1	2,000	2,000
Distilleries	1	22,000	22,000
Electric light and power	5	231,000	101,800
Embroidery establishments	3	1,035,000	1,007,000
Engineering construction and repair	3	75,000	20,000
Fertilizer factories	1	100,000	25,000
General Manufacturers	4	610,000	180,600
Hemp stripping	1	40,000	8,000
Oil factories	3	650,000	430,000
Photo studios	1	10,000	2,000
Printing and publishing	6	345,000	123,050
Rice mills	8	335,904	297,314
Saw mills	1	15,000	9,500
Sugar mills and refineries	7	7,351,000	1,916,000
Tobacco factories	1	99,000	25,000
Miscellaneous	*77*	*231,500*	*95,700*
Education (private schools)	30	59,000	14,000
Estate administration (church)	2	——	——
Publicity	1	——	——
Religious and charitable associations	4	——	——
Social and recreation	40	172,500	81,700
Grand Total	272	P.41,726,704	P.13,370,338

Shanghai Tramway Operations

The following are the traffic returns of the Shanghai Tramways for the weeks ended January 7, 14, and 21:—

The week ended January 7.

Gross Receipts $41,854.76 as compared with $36,045.45 in 1919.

Loss by currency depreciation $10,763.28 as compared with $8,487.68 in 1919.

Total Effective Receipts $31,091.48 as compared with $27,557.77 in 1919.

Percentage of loss by currency depreciation $26.84 as compared with $24.70 in 1919.

Car Miles run $87,999 as compared with $79,092 in 1919.

Passengers Carried $1,866,706 as compared with $1,637,061 in 1919.

The week ended January 14:

Gross Receipts $40,830.73 as compared with $33,158.08 in 1919.

Loss by currency depreciation $10,307.88 as compared with $7,550.05 in 1919.

Effective Receipts $30,522.85 as compared with $25,608.03 in 1919.

Percentage of loss by currency depreciation $26.60 as compared with $24.14 in 1919.

Car Miles run $88,913 as compared with $78,771 in 1919.

Passengers Carried $1,832,787 as compared with $1,505,191 in 1919.

The week ended January 21:

Gross Receipts $41,076.47 as compared with $35,033.67 in 1919.

Loss by currency depreciation $10,376.02 as compared with $7,883.55 in 1919.

Effective Receipts $30,700.45 as compared with $27,150.12 in 1919.

Percentage of loss by currency depreciation $26.72 as compared with $23.80 in 1919.

Car Miles run $88,595 as compared with $81,528 in 1919.

Passengers Carried $1,843,106 as compared with $1,594,229 in 1919.

Engineering Expansion at Manila

The Honolulu Iron Works has just acquired by purchase one-half of the controlling interest of the Earnshaw Slipways and Engineering Company, Manila, at P3,500,000, the two entities to be later fused into one single corporation to be capitalized at P10,000,000 to go into marine engineering and into the manufacture of machinery for sugar centrals more extensively than each, as separate companies, has done in the past. This is considered one of the biggest business transactions to be consummated in Manila for many years.

Thomas Earnshaw, who, with his brother Manuel, owns the Earnshaw Company, when interviewed by a representative of the FAR EASTERN REVIEW, declared that it is his intention to increase the plant and to start competing in all the marine engineering fields, such as dry docking, boat constructing and repairing. The Honolulu Iron Works will install a big plant near the Earnshaw Slipway for the manufacture of sugar machinery for sugar centrals.

Manuel Earnshaw and president Davis of the Honolulu Iron Works are now on their way to Manila, and when they arrive the details of the consolidation of the two companies into one single corporation will be fully gone into.

In order to provide for the development of the big corporation, the Earnshaw Slipways and Engineering Company has applied for the lease of a large block of land in the Port District immediately joining the site where the company is now located.

Employees on China's Railways

"For every three and a half officers and clerks employed on the Chinese Government railways there is a servant to wait upon them," is a candid remark in the 1918 report of China's lines.

The total number of employees of the Chinese Government railways in 1918 was 63,795 compared with 60,447 in 1917. This is an increase of 5½ per cent. Over 40,000 of this total are engaged in manual labor, either handling goods, or keeping up the condition of cars, nearly 30,000 are engaged in keeping the machinery and roadways in repair. Clerks outnumber the men handling the trains. More men are employed in policing the line than in running trains over the line. 20,756 men are in the Engineering Department; 14,724 men are in the Locomotive Department; 5,231 men are in the Running Department; 11,750 men are in the Traffic Department; 3,521 men are in the General Administration Department; 537 men are in the Telegraphic Department; 6,878 men are in the Police Department, while other departments employ 398. Compared with railways in many countries, the Chinese lines are heavily manned. This is partly due to the higher labor wage in such countries, which is encouraging the use of labor-saving machinery in offices as well as in the handling of physical things. The higher price of materials in China, due to distance from source, leads to a great deal of repair where in Europe or America purchases of new parts would be made.

It has been decided to open the new Netherland-Indian Annual Industrial Fair at Bandoeng (Island of Java) on May 17, 1920. The object of the Fair is to promote native and foreign manufacturing industries in the Netherland East Indies. It will continue for a fortnight, unless a longer term seems desirable.

jars for winter provision and the trifling balance was sold to buy clothes. Both brothers were camel drivers in the winter and it was by virtue of their earnings abroad that the family subsisted, rather than upon the meagre produce of their land which was poorly irrigated and was everywhere white with soda.

Ninghsia is in the centre of a strip of irrigated land lying between the Yellow River and the Alashan mountains, which is nowhere more than twenty miles wide, and which is possibly 170 miles from north to south. The mountain range, while it is rugged and magnificent and provides a splendid contrast with the green lowlands along the river's bank, supplies little or no water to the farmers and as the rainfall is insufficient, the crops are dependent upon the irrigation ditches which bring water from the Yellow River into the farming country and carry it back into the river again. There is one long canal which runs past Ninghsia and which parallels the river throughout almost the whole length of the agricultural country. These irrigation canals are certainly very ancient and their maintenance is a heavy expense to the country for the silt from the Yellow River fills them up rapidly and every farmer is required to work so many days a year for each thirty *mow* of land that he cultivates, at excavating in the canals, or to pay subsidies at the rate of forty coppers a day for it. Thanks to the water supply thus provided, the Ninghsia district produces rice which is grown in very few places in the northwest of China, and also great quantities of hemp shipped for the most part to Paotou and thence to the coast. The large production of wool in the hills on both sides of the Yellow River affords work for many camels and in some of the Mohammedan communities, notably in Huang-chichiao, nearly every farmer is a camel driver in winter and all those who prosper invest their surplus profits in camels.

Ninghsia is famous in China for the carpets produced there but while small carpets of a very fine texture are manufactured, the larger rugs are usually of no better quality than those manufactured at the coast and do not seem to be much cheaper. Marco Polo in his account of Ninghsia, says that the place was famous for a fabric manufactured from camel's hair, in which the wool of white camels was much used. On my several visits to Ninghsia I made inquiries about this material but have not been able to learn that it is still manufactured. The white camels do, however, exist. There are probably some white camels in every camel breeding community in Tartary, but the percentage of white camels in the Alashan district is certainly higher than in any other which I have visited, and as they are usually very tall and powerful, one is lead to believe that originally they were probably a separate breed which the natives have not taken the trouble to keep distinct. Ninghsia is better known to Chinese at the coast for a kind of sheepskin used in lining the clothes of the wealthy and ultra-fashionable, known as *t'an p'i*. The wool on this skin is in long, silky spirals, peculiarly fine and soft and the skin itself is remarkably thin and light. It is now very rare, even in Ninghsia, and commands very high prices.

The Ting farm was about seven *li* from the main road between Shihtsuitze and Ninghsia. It would have been out of our way to have travelled by it so we took the river road which runs all the way through Mohammedan villages a few *li* from the riverbank, in which boat building seems to be the sole industry. We set out on the morning of October 31, and after struggling through a maze of irrigation ditches both great and small for seventy painfully long *li*, we arrived after dark at the Mohammedan community of Chingshui-pu. We took it for granted that there would be some accommodation for travellers there but found that there was no inn and as it was already dark, we were just beginning to worry when Ting remembered that one of our fellow travellers across the Ordos, an old man named Yang, owner of the two donkeys in our caravan, lived in Chingshuipo so we made diligent search for his house and finally found it about a quarter of a mile from the walled village. We were received by the entire family, and it was a very large one, with a noisy welcome and were ushered into a big living room well heated with a brass brazier and provided with a huge *k'ang* upon which 11 of us slept that night very comfortably. The Yangs, like the Tings, were farmers but they were farmers on a very different scale. We had no sooner made ourselves comfortable on the *k'ang* than food began to appear in great abundance and great variety and it kept on coming as long as anyone was awake to eat it. A horde of grandchildren, clean, good-looking and rather well dressed, lined up along the *k'ang* and stared at the visitor for several hours, while old grandfather Yang, who was very garrulous and quite a wit in his way, poured tea for me and lectured his progeny for several hours upon the habits, mannerisms and peculiar virtues of the stranger within their gates. He had business in Ninghsia, so the following morning he set out with us mounted on his donkey, and travelled with us the remaining fifty *li* to the city.

Rolling Stock on China's Railways

On the fourteen railways owned and operated by the Chinese Government there were in 1918 a total of 653 locomotives (including 22 composite locos.), as compared with 648 in 1917, 638 in 1916, and 629 in 1915. Of these 204 were passenger locos.; 320 goods locos.; and 129 shunting locos. There were 3.7 passenger locos per kilometre of line; 5.8 goods locos, and 2.3 shunting locos. The total tractive capacity of the passenger locomotives was 1,954.444 metric tons, while that of the goods locomotives was 3,239.984 metric tons, and the shunting locos 835.519 metric tons.

The number of goods wagons on the Chinese Government railways at the end of December, 1918, totalled 10,748, being an increase of 89 over the number reported for the same date in 1917. The Tientsin-Pukow railway acquired practically permanent use of 50 open and 150 covered wagons with the capacity of 30 tons each, but omitting this 6,000 tons and all other leased equipment, the capacity owned at the end of 1918 was 243,065 tons. Covered wagons have an average capacity of 23.8 tons, and open wagons 22.5 tons. Carriages totalled 1,231 with a carrying capacity of 61,794 passengers. This number of cars includes 12 dining cars, and 26 postal vans. The seating capacity of carriages is greater as the class is lower. The 1st class average about 32, the 2nd class 54, and the 3rd class 75 passengers. The value of the higher class carriages is greater and the weight fully as much as the lower class. The best performance per seat is 133 kilometres per day. The average performance is 103 kilometres per day.

Reports from America state that Japan has agreed to withdraw the demand made that Mongolia and Manchuria should be excluded from the operations of the new Consortium. Provided that the Powers will respect all Japanese financial, economical and political privileges and rights in Manchuria which have been obtained from the Chinese Government previous to the organization of the new Consortium. Reports from Harbin also state that the provincial assemblies and Chambers of Commerce of the Three Eastern provinces also desire that the demand of Japan for exclusion should not be complied with. They propose to hold a conference at Changchun "to oppose the Japanese demand by every means at their disposal." If it is true that Japan has herself cancelled the demand, then everybody should be happy.

Engineering, Financial, Industrial and Commercial News

RAILWAYS

The Changchow-Amoy Railway.—The railway from Amoy to Changchow which is only fifty *li* in length will be extended for a distance of thirty to forty *li* beyond Changchow. The projected extension is under survey, and it is calculated that after the new section is completed, the railway will be able to make a profit of $300,000 a year.

The Kiangsi-Kuangtung Railway.—Japan has long been working hard to obtain the concession for the construction of the railway line between Nanchang and Chiaochow, says the "Peking Daily News." The gentry of Kiangsi and Kuangtung provinces some time ago decided to construct the line themselves without resorting to foreign loans; but their scheme was frustrated by the civil war. The Kuangtung authorities have addressed a telegram to the Tuchun of Kiangsi stating that should they procrastinate, Japan will certainly step in, and that steps should be taken at once to construct the line. It has been agreed by the two provinces that a Company should be organized, and the local authorities should do their best to urge the merchants to subscribe shares.

Changsha-Changteh Project.—Peking newspapers report that the Chinese authorities are contemplating the construction of a line between Changsha and Changteh in Hunan Province. Attention must be called to the fact that this line is already pledged under the contract held by Messrs. Pauling & Co., of London, for the building of a line from Shasi, on the Yangtze River, to Shingyifu in Kweichow Province.

Krupp Works Show Loss.—For the first time since the foundation of the Krupp arms industry at Essen the balance sheet of the concern this year shows a loss. The deficit amounts to 36,000,000 marks ($7,200,000), but it is covered by a balance brought forward and a special reserve of 20,000,000 marks ($4,000,000).

The Krupp works are at present constructing locomotives, freight trucks, agricultural machinery and moving picture apparatus instead of guns.

Japan and the Chinese Eastern Railway.—Concerning the state of affairs in the Chinese Eastern Railway, Mr. Hsu Nai-lin, Civil Governor of Kirin, reported to the Peking Government as follows:—"According to the report of an agent the Japanese are endeavoring to assist Semenoff in his activities in the eastern part of Irkutsk, and in return they are to obtain the mining and forestry rights of that region. Semenoff has sent a delegate to Japan in this connection. It is also reported that the Japanese coaxed the Russians to increase their troops along the Chinese Eastern Railway and to base such action on the ground that the Chinese troops along this railway are neglecting their duty. That the Japanese are anxious to grasp the right of protecting the Chinese Eastern Railway is a general belief. The very fact that the Japanese are said to be assisting the Bolsheviks to create trouble round about this vicinity is conceivably a means of attaining this end, etc."

Projected Kalgan and Kiakta Railway.—According to the "Shun Tien Shih Pao," Gen. Hsu Shu-cheng, who was appointed the Superintendent of the proposed Kalgan-Kiakta Line, being anxious to see it built at once had an interview with Mr. Tseng Yu-chien, Minister of Communications, and discussed the matter with him. It is understood that the road will be built with the surplus of the Peking-Hankow and the Peking-Suiyuan railways. A survey will be made in May this year.

Extension of Yueh-Han Railway.—The Ministry of Communications of the Canton Military Government has again ordered the President and Vice-President of the Yueh-Han Railway Company to complete the line from Shiuchow to Pingshek. Some time ago the Yueh-Han Railway Company sent an engineering squad to investigate conditions along the line, and it has submitted a report that the cost for construction of the line would approximately be one million dollars. The President and Vice-President, seeing that the Railway Company's coffers are depleted, and that it is financially impossible for the Railway Company to undertake the extension at present, have requested the Ministry of Communications to supply money for constructing the line.

American Locomotives for Belgium.—Contracts for the building of seventy-five railroad locomotives for the Belgian government have been signed by the American Locomotive Company. They are of a new design and construction will be delayed for weeks while plans are being prepared.

The South Western Provinces' Railway Scheme.—The Canton Military Government has issued another instruction to the Tuchuns and Shenchangs of Yunnan, Kueichow, Szechuan, Shensi, Kuangtung, Kuangsi, Hunan and Fukien, pointing out the importance of the immediate construction of railways in their provinces in order to secure prosperity and facility of communications in the country. They are informed of the establishment of the Office of the Director-General of Railway Construction and urged to co-operate, etc. As it has been discovered that the main object of the scheme was to secure foreign loans and to strengthen the positions of the southern leaders, the President has decided to lodge a protest with the South, and notify the Foreign Powers of his decision not to bear any responsibility for any loans concluded without the approval of the Central Government. A mandate will also be promulgated informing the public of the sinister motives of this railway scheme.

The unified control of the railroads of Southwest China was planned long ago. It is reported that the following appointments were made at a recent meeting of the Directors of the Southern Military Government:—

Associate Directors for Szechuan—Hsun Ke-wu and Yang Shu-tsan, for Kwangtung—Moh Yung-sin and Chang Ching-fan, for Kwangsi—Tang Hou-ming and Li Chin-chen, for Hunan—Tang Yen-kai, for Yunan—Tang Chi-yao, for Kweichow Liu Shen-si, for Shens—Yu Yeu-jen and Chang Fan, for Fukien—Lin Bao-yi and Cheng Chun-ming.

New Railway Venture in North Chosen.—A plan has for some time past been under consideration to establish a railway company in Korea under the name of the Hokusen Kogyo Tetsudo. The promoters, it is understood, filed on December 22 last an application with the Government-General for permission to do so. In addition to the construction of a railway through the northern part of Korea the projected company, when in working order, will undertake the investment of capital in afforestation, mining, and electrical and other ventures. The capital of the company is ten million yen, to be divided into 200,000 shares. One million yen will be called in as working fund immediately after the required official permission is obtained.

The Siberian Railway.—Mr. Li Chiao-ao, Chinese High Commissioner at Vladivostok, reports to the Government that the delegations of the Allied Powers at Vladivostok have formed a special committee to control the eastern part of the Siberian railway, with the intention of preventing the military factions from interfering with communication facilities. The operation field of this committee will extend to the Chinese Eastern Railway. Mr. Li asks what attitude he is to adopt towards this matter. The Government has referred this question to the Ministers of Foreign Affairs and Communications for further discussion.

TRAMWAYS

Peking Tramway.—The plan of constructing a tramway in Peking, which has remained in abeyance since the outbreak of the European War, is again under the consideration of the Peking Municipal authorities. The right to construct this line is held by the Banque Industrielle de Chine.

ROADS

Roads in Kwangtung Province.—The Managing Director of the Canton-Samshui Railway Company has recently proposed to construct a motor road from Fatshan to Kuanshan. The proposed road is 15 miles long and will have three stations to be located at Lansek, Shuitang and Kuanshan. It is estimated to cost more than $400,000.

Road Construction Company.—Some of the leading business men in Japan have formed a company with a capital of several million yen for the purpose of undertaking road construction contracts.

SHIPBUILDING

A Reinforced Concrete Motor Vessel.—The motor vessel *Cochin-Chine*—the first reinforced ship of considerable size to be constructed in the East—recently arrived at Singapore from Saigon with a cargo of 1,000 tons of rice. The vessel is said to be a credit to the enterprise of Messrs. Brossard & Mopin, reinforced concrete specialists, of Saigon, Tientsin, Singapore, etc., by whom she was

The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XVI SHANGHAI, APRIL, 1920 No. 4

Port and Railway Schemes for South China

Dr. Sun Yat Sen's Third Program for the International Development of China

The First Program for the International Development of China as devised by Dr. Sun Yat-sen was published in the FAR EASTERN REVIEW of June, 1919, and embraced: (1) the construction of a great Northern port on the Gulf of Pechihli; (2) the building of a system of railways from the great Northern port to the North-Western extremity of China; (3) the colonization of Mongolia and Turkestan; (4) the construction of canals to connect the inland waterway systems of North and Central China with the great Northern port; and (5) the development of the iron and coal fields in Shansi and the construction of an iron and steel works. In the FAR EASTERN REVIEW of August, 1919, the Second Program was published and comprised (1) a great Eastern port; (2) the regulation of the Yangtze channels and embankments; (3) the construction of river ports; (4) the improvement of existing canals and waterways in connection with the Yangtze, and (5) the establishment of large cement works.

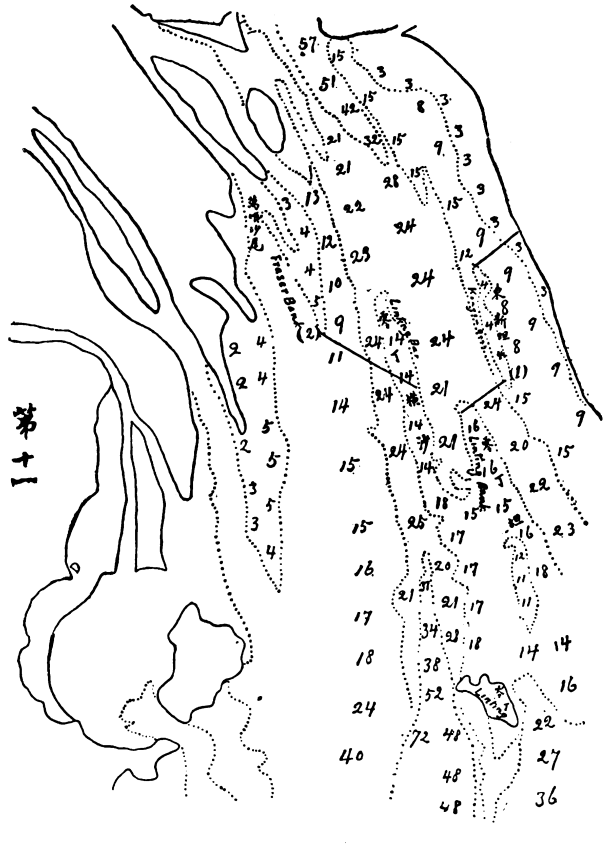
By Dr. Sun Yat-sen, ex-President of China.

THE main feature of the third program will be the construction of a great southern port which will complete the plan for three first-class seaports in China as proposed in the preliminary part of this International Development Scheme. Our Great Southern Port will naturally be Canton, which is not only the centre of commerce in South China but also the largest city in all China. Until recent times it was the largest city on the Coasts of the Pacific, and the centre of commerce of Asia. With the development of China, Canton will surely resume its former importance. Around this southern metropolis I formulate the third program as follows:—

I. The Improvement of Canton as a World Port.
II. The Improvement of the Waterway System of Canton.
III. The Construction of the Southwestern Railway System of China.
IV. The Construction of Coast Ports and Fishing Harbors.
V. The Establishment of Shipbuilding Yards.

Part I.—The Improvement of Canton as a World Port

Canton's position as a seaport has been taken away by Hongkong since its session to England after the Opium War. But as a commercial centre of South China, Canton still holds its own, despite the advantages of deep-water harbor, the artificial improvements of Hongkong, and the political dominance of England. The loss of its position as a seaport is entirely due to the ignorance of the Chinese people who never made any combined effort to improve the welfare of the country, and also to the corrupt government and officials of the Manchu dynasty. Since the establishment of the Republic, the people have begun to awake very rapidly and many schemes have been suggested to make Canton a seaport. This awakening of the millions of Chinese has caused much apprehension to the Hongkong Government. The authorities of that colony have been doing their utmost to hinder every move to restore Canton as a seaport and try to nip every scheme in the bud. Of course, if Canton is improved and made into a world port, then all the services that Hongkong performs for her as a shipping stage would be dipensed with altogether. But a developed Canton and a prosperous China will recompense Hongkong in various ways a hundred times more than its present position as the monopolized ocean port of a backward and poor China. Just look at the port of Victoria in British Columbia, which was once the only seaport of West Canada as well as the Northwestern region of the United States, but it prospered very little then with an undeveloped hinterland despite its monopolistic character. Whereas as soon as the rival ports arose Vancouver on its own side, and Seattle and Tacoma on the American side, all within



MAP I—Estuary of the River at Canton

the same distance as Hongkong is to Canton, all of them because of a developed hinterland prospered wonderfully, despite the keen competition between them as seaports. Thus, we see that competitive seaports like Vancouver, Seattle, and Tacoma instead of killing Victoria, as was once supposed by shortsighted people, have made it more prosperous than ever. Then, why doubt that a prosperous Canton and a developed China would not give the same result to Hongkong? This is but a natural outcome. Therefore, there should be no fear that a prosperous Canton and a developed China would be harmful to Hongkong as a free port. So, instead of doing the utmost as hitherto to hinder the development of Canton as a seaport, the Hongkong authorities should do their utmost to encourage such a project. Besides, the development of Canton and South China will benefit the English as a whole commercially a hundred times more than Hongkong can do at present. Although the local authorities of that crown colony do not see far enough to realize it, however, I believe that the great statesmen and captains of industries in the now mightiest empire of the world would surely see it. With this belief in my mind I feel quite safe in giving publicity to the scheme of my international development of Canton as a world port in South China.

Canton is situated at the head of the Canton Delta, which is formed by the junction of three rivers—the Sikiang or West River, the Peikiang or North River, and the Tungkiang or East River. The area of this delta is about 3,000 square miles and has the most fertile alluvial soil known in China. The land yields three crops a year—two crops of rice and one crop of other products such as potatoes or beets. In silk culture, it gives eight crops every year. The most delicious fruits of many varieties are produced in this delta. This is the most thickly populated district of all China. Within this delta and its immediate neighborhood, more than half of the population of Kwangtung province is found. This is the reason why, despite the great productivity of this fertile delta, large quantities of foods have to be supplied by the surrounding country as well as by foreign imports. Before the age of machinery Canton for centuries was well known as an industrial centre of Eastern Asia. The workmanship and handicraft of its people are still unequaled in many parts of the world. If machinery will be introduced in its industries under our international development scheme, Canton will soon recover its former grandeur as a great manufacturing centre.

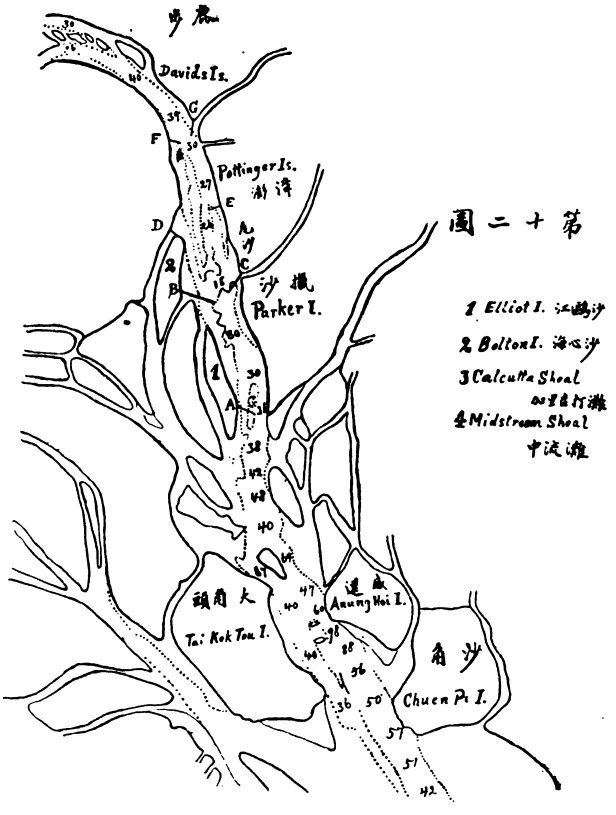
As a world port, Canton is in a most advantageous position. Being situated at the junction of three navigable rivers and at the head of the ocean navigation is a pivot of inland water as well as ocean communication in South China. If the Southwestern railway system is completed, then Canton will be equal in importance to the two great ports in North and East China, in regard to transportation facilities. The ocean approach of Canton is generally deep excepting at two points which can be easily trained and dredged to enable modern liners to pass in and out at any hour. The deep water line of the ocean reaches up to Lingting Island, where the depth is from 8 to 10 fathoms. Above Lingting, the channel gets shallower (about 3 or 4 fathoms) and runs about 15 miles up to the Fumen Entrance. From this point the water becomes deep again (between 6 and 10 fathoms) right up to the Second Bar—a distance of 20 miles. At the Second Bar, the water is about 18 to 20-ft. deep for only a few hundred yards. After crossing the Second Bar, the water becomes deep again for a distance of 10 miles averaging about 30-ft. deep up to the First Bar which will be the city limit of our future Canton.

To improve the Approach to Canton, I suggest that two submerged training walls be built at the left side of the Canton Estuary above Lingting Island—one from the shore to the head of the Kongsu Bank, and another from the end of the same bank to the head of the Lingting Bank. The first training wall will be 3 to 4-ft. under water just at the same level of the bank. The second wall will be from 4-ft. at one end to 16-ft. at the other, which are the levels of the respective banks which it connects. (See (1) (3) Map I). It will cross a channel of 24-ft. deep between them. These two walls together with the four-foot Kongsu Bank will act as one continuous wall and will direct the undercurrent which now runs between the left shore and Lingting Bank, into the middle part of the estuary, thus cutting a channel between the bar and the bank of the same name to meet the deep water on the west side of Lingting Island. On the right side of the Canton Estuary, a training wall should be built from the lower part of Fraser Bank in a southeasterly direction across the 24-foot channel into the Lingting Bar ending at the east edge of that bar. (See (2) Map I). Thus, with these submerged walls on both sides of the estuary to confine the undercurrent in the middle, a very deep channel can be formed to connect with the Fumen Entrance at one end and the Lingting trough at the other both of which are about 50-ft. deep so that a thoroughfare from deep sea right up to the Second Bar of the Pearl River will be created.

These submerged sea walls taken together are about 8 miles in length and will be built only 6 to 12-ft. from the bottom of the sea. The expenses will not be much while the acceleration of the natural reclamation process will be very great. Thus, the lands that will be formed on both sides by these walls will far more than repay the expenses of the work of building these walls.

To regulate the Approach of Canton, in that part of the Pearl River from the Fumen Entrance to Whampoa, I suggest that the East River Estuaries be concentrated in a single outlet by using the uppermost channel which joins the Pearl River at the lower point of Davids Island. The other outlets of the East River, which joins the Pearl River below the Second Bar, should be closed up by dams built to the height of the normal water level so as to permit them to serve as flood channels in the rainy season. By concentrating the whole volume of water of the East River above the Second Bar, a stronger current could be obtained to flush the upper part of this section of the river.

In the training works of this section, I propose that several jetties should be built as follows: First, a jetty from Elliot Island at point (*a*) to the farther side of Calcutta Shoal opposite the lower point of Parker Island. This will block the current



MAP II

between Elliot Island and Calcutta Shoal and divert it into the present 36-ft. channel thus making it deeper by its natural force. Second, another jetty from Bolton Island, at point (*b*) to midstream terminating at the lower side of the Second Bar, on the right side of the river. Third, a jetty from the lower point of Pottinger Island at (*c*) to midstream terminating at the lower side of the same bar on the left side of the river. Thus the Second Bar would be flushed by the concentrated current created by these two jetties. The shallow bottom above these jetties should be dredged to the required depth. If a rocky bottom is found at this bar it should be blasted and removed, so as to give a uniform depth to the whole approach. Fourth, the channel between the right bank of the river and Bolton Island should be blocked up at (*d*). Fifth, a jetty from Pottinger Island at (*e*) to the head of the Second Bar Bank in midstream so as to cut off the current at the left side of the river and to increase the velocity in the middle channel. Sixth, a jetty from the right shore at (*f*) about midway between Danes Island and the Second Bar, should be built to the head of the Midstream Shoal so as to cut off the current at the right side of the river. And seventh, another jetty from the lower point of Davids Island at (*g*) to midstream opposite to the end of jetty (*f*). Jetties (*g*) and (*f*) will concentrate the current of the upper Pearl River while at the same time Jetty (g) will also turn the East River current into the same direction as that of the Pearl River. (See Map II).

By these seven jetties, the current between Whampoa and Fumen could be controlled and the bottom of the river flushed to a depth of 40-ft. or more, thus creating a thoroughfare for ocean-going steamers from the open sea right up to the city of Canton. These jetties taken together will be not more than 5 miles in length and mostly in very shallow water. After the building of these jetties, land will be rapidly formed between jetties along both sides of the channel by natural process. The reclaimed land alone will be quite enough to pay the expenses of constructing these jetties, aside from the fact that the main object of regulating the river and opening up a deep channel for ocean transportation will have been realized.

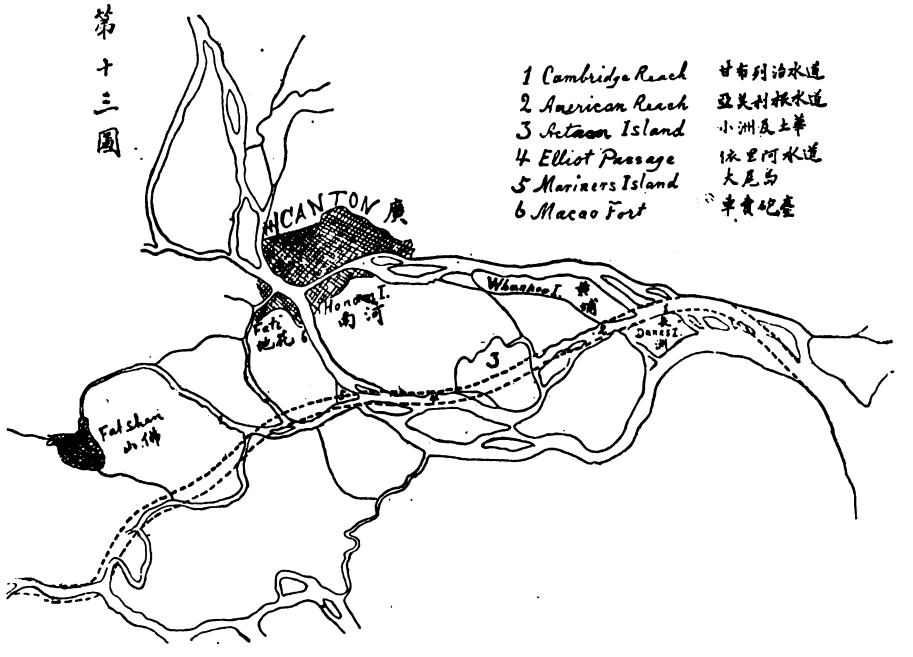
Making a World Port of Canton City

Having dealt with the approach to Canton, we may now take up the improvement of Canton City itself as a world port. The harbor limit of Canton will be at the First Bar. From there, the harbor will follow the deep water of Cambridge Reach and the water between Whampoa and Danes Island into American Reach. At this point it will cut through Actaeon Island to the south of Honam Island and follow the Elliot Passage to Mariners Island. From Mariners Island following the Fatshan Creek, a straight channel should be cut in a southwesterly direction to the Tamchow Channel. Thus, a new waterway will be made from the First Bar to Tamchow Channel, a distance of about 25 miles. This waterway will be the main outlet of the North River as well as a thoroughfare for the West River, and will also serve as the harbor of Canton. By conveying all the water of the North River and a part of that of the West River through this waterway, the current will be strong enough to flush the harbor to a depth of 40-ft. or more. (See Map III).

The new city of Canton will be extended from Whampoa to Fatshan, separated by the Macao Fort and Shameen Reaches. The section that lies east of this water should be developed into commercial quarters and that west of it into factory quarters. The factory section should be transected by canals connecting with the Fati and Fatshan creeks so as to give cheap transportation facilities to every factory. In the commercial section, tidal wharves with modern plants and warehouses should be provided. A bund should be built from the First Bar Island along the north side of the new waterway, the west side of Honam to connect with the bund of Shameen, and the northwestern side of Canton city. Another bund should be built from above Fati along the east side of Fati Island to Mariners Island thence turning southwest along the left bank of the new waterway. The Front Reach, that is, the river between the present Canton city and Honam Island should be filled up from the upper point of Honam to Whampoa for city building.

In regard to the question of remuneration, the development of Canton as a world port will be the most profitable undertaking of the kind in the International Development Scheme. Because, besides its commanding position as a commercial metropolis and its possession of advantageous facilities as a manufacturing centre of South China, a modern residential city is in great demand in this part of the country. The well-to-do people and merchants of this rich delta as well as those retired Chinese merchants and millionaires abroad all over the world are very eager to spend their remaining days at home. But owing to the lack of modern conveniences and comforts they reluctantly remain in foreign countries. Thus to build a new city with modern equipments for residential purposes alone, in Canton, would pay splendidly. The land outside of Canton is at present about 200 dollars a *mow*. If the land marked off for the future city of Canton should be taken up by the State on the same basis as elsewhere in this International Development Scheme, immediately after the streets are laid out and improvements made, the price of land would rise from 10-50 times its original value.

The landscape of the environment of Canton is exceptionally beautiful and charming. It is an ideal place for planning a garden city with attractive parks. The location of the city of Canton resembles that of Nanking but is of greater magnitude and beauty. It possesses the three natural elements—deep water, high mountains, and vast extent of level land which furnish facilities for an industrial and commercial centre and provide as well natural scenery for the enjoyment of men. The beautiful



MAP III

valleys and hills of the northern shore of the Pearl River could be laid out for ideal winter resorts and the high mountain tops could be utilized for summer resorts.

Within the city limits at the northwest corner, a rich coal field has been found. When the coal is mined and modern plants for generating electricity and producing gas are provided, then cheap electricity and gas could be had for transportation, for manufacturing, for lighting, heating, and cooking purposes. And so the present wasteful methods of transportation, and expensive fuels for manufacturing and cooking for the populous city of Canton can be done away with entirely. Thus the great economic wonders could be wrought by such improvements. The present population of Canton is over a million and if our development plan is carried out, this city would grow in leaps and bounds within a very short time. The population will become greater than any other city and the profit of our undertaking will become correspondingly large.

Part II.—The Improvement of the Waterway System of Canton

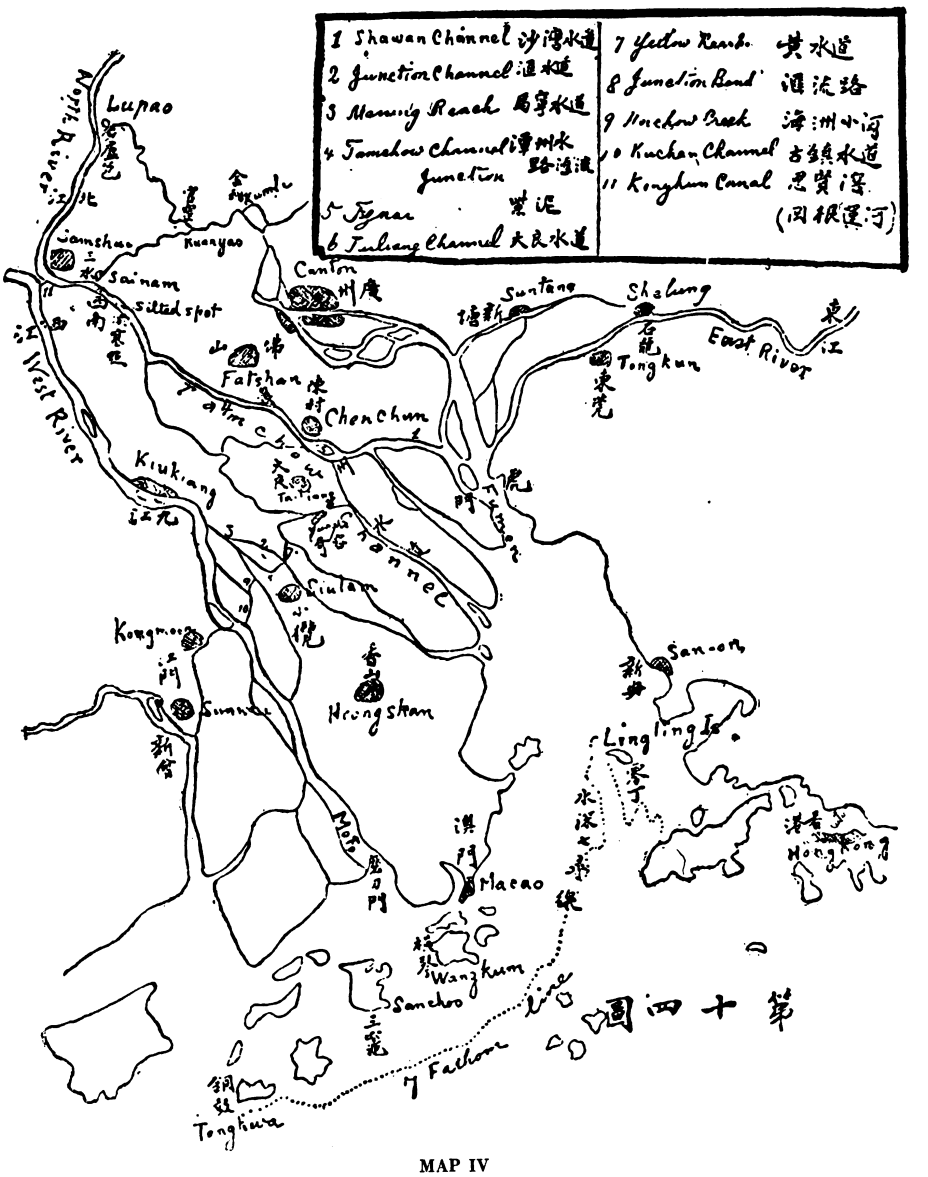
The most important waterway system in South China is the Canton system. Besides this the others are not of much importance and will be dealt with elsewhere with their ports. In dealing with the Canton system of waterways, I have to divide it as follows:—

(*a*) The Canton Delta.
(*b*) The West River.
(*c*) The North River.
(*d*) The East River.

(*a*) To improve the Canton Delta we have to consider the proposition from three points of view: First, the problem of flood prevention; second, the problem of navigation; and third, the problem of reclamation. Each of these problems affects the others so the solution of one will help that of the others.

First, the problem of flood prevention. The frequent repetition of floods in recent years has wrought great disasters to the people in the neighborhood of Canton. It has destroyed lives by the thousands and property by the millions. The part which suffers most is the country between Canton and Lupao, lying just immediately north of the Canton Delta. This fatal spot is, I think, created by the silting up of the main outlet of the North River immediately below Sainam. On account of this, the North River has to find its outlets through the West River by the short canal at Samshui and through two small streams one from Sainam, and another from Lupao. The former runs in a northeasterly direction and the latter in a southeasterly direction and they join at Kuanyao. From this point, the river takes a northeasterly course as far as Kumli, thence, turning southeast, passes the west suburb of Canton. Since the North River is silted up below Sainam, its channel above that spot is also getting shallower every year. At present the river above Samshui city is only about 4 or 5-ft. deep. When the North River rises its water generally finds its way into the West River through the Kongkun Canal. But if the West River should rise at the same time, then there would be no outlet for the North River and its water would accumulate until it overflows its dykes above and below Lupao. This would naturally cause the dykes to break at some point and allow the water to rush out and flood the whole country that is meant to be protected by these dykes. The remedy for the North River is to reopen the main outlet below Sainam and have the whole channel dredged deep from Tsingyuen to the sea. Fortunately, in our improvement of the navigation of the Canton Delta, we have to do the same thing; so this one work will serve two purposes.

The remedy for the West River is that the shallow part just at its junction with the sea between Wangkum and Sanchoo islands should be trained by walls on both sides—a long one on the left, and a short one on the right—so as to concentrate the current to cut the river bed here to a depth of 20-ft. or more. In this way, a uniform depth is secured, for after passing the Moto Entrance the West River has an average depth of 20 to



MAP IV

30-ft. right along its whole course through this delta. With a uniform depth all the way to the sea, the undercurrent will run quicker and drain off the flood water more rapidly. Besides the deepening process, both shores should be regulated so as to give a uniform width to the channel. Midstream shoals and islands should be removed.

The East River Valley does not suffer so severely from floods as those of the other two rivers, the West and the North, and its remedy will be provided in the regulation of the river for navigation. This will be dealt with in that connection.

Second, the problem of navigation in the Canton Delta in connection with the three rivers. In dealing with this question we commence with the West River. In former days the traffic between the West River Valley and Canton always passed through Fatshan and Samshui, a distance of about 35 miles. But since the silting up of the Fatshan Channel below Sainam, the traffic has to take a great detour by descending the Pearl River southeastward as far as Fumen, then turn northwest into the Shawan Channel, then southwest into the Tamchow Channel and then west into the Tailiang Channel and south into the Junction Channel and Maning Reach. Here it enters into the West River and runs a northwesterly direction up to Samshui Junction on this river. The whole journey covers a distance of about 95 miles, which compared with the old route is longer by 60 miles. The traffic between Canton and the West River Valley is very great. At present there are many thousands of steam launches plying between Canton city and the outlying districts, and more than half of that number are carrying traffic to and fro on the West River. Every boat has to run 95 miles on each trip whereas if the channel between Samshui and Canton is improved, the distance would be only 35 miles. What a great saving it will be!

In our project to improve the Canton Approach and Harbor, I suggested the training of a deep channel from the sea to Whampoa and from Whampoa to Tamchow Channel. We now have to prolong this channel from its Tamchow Junction up to Samshui Junction on the West River. This channel should be made at least 20-ft. deep so as to join the deeper water of the West River above the Samshui Junction. And the same depth should be maintained in the North River itself some distance above Samshui, so as to give facility for the navigation of larger vessels up the river when the whole waterway is improved.

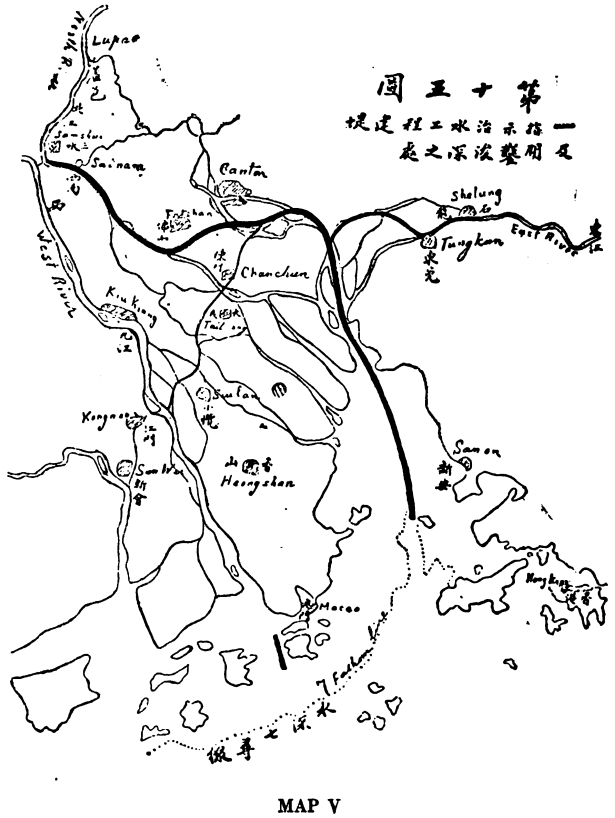
To improve the East River for navigation in the Canton Delta we should concentrate the current of its estuaries into one single outlet by using the right channel which joins the Pearl River at Davids Island, thus deepening the channel as well as shortening the distance between Canton and the East River districts when the upper part of the river is improved.

Another improvement in the Canton Delta for navigation is the opening of a straight canal between Canton city and Kongmoon so as to shorten the passage of the heavy traffic between this metropolis and the Szeyap districts. This canal should begin by staightening the Chanchun Creek south of Canton as far as Tsznai. Then crossing the Tamchow Channel it should enter into the Shuntuck Creek and follow this creek to its end emerging into the Shuntuck Branch at right angles. From there, a new canal must be cut straight to the turn of the Tailiang Channel near Yungki, then the canal should follow this channel through Yellow Reach as far as the Junction Bend. Here another new canal must be cut through to the Hoichow Creek, then it should follow Kuchan Channel to the main channel of the West River, and crossing it enter into the Kongmoon Branch. Thus, a straight canal can be formed between Canton Kongmoon. In order to understand the improvement of the Canton Delta more clearly see Maps IV and V.

Third, the problem of reclamation. A very profitable undertaking in the Canton Delta is the reclamation of new land. This process has been going on for centuries. Many thousands of acres of new land are thus being added to cultivation from year to year. But hitherto all the reclamation has been effected by private enterprise only, and there are no regulations for it. So sometimes this private enterprise causes great detriment to public welfare such as blocking up navigable channels and causing floods. A glaring case is the reclamation work just above the Moto Island, which blocks more than half of the Main Channel of the West River. In the regulation of the West River, I propose to cut this new land away. In order to protect the public welfare, the reclamation work in this Delta must be taken up by the State and the profits must go to defray the expenses of improving this waterway system for navigation, as well as for the prevention of floods. At present, the area that can be gradually reclaimed is great in extent. On the left side of the Canton Estuary, the available area is about 40 square miles, and on the right side, about 140 square miles. On the estuaries of the West River from Macao to Tongkwa Island, there is an available area of about 200 square miles. Of the three hundred eighty square miles, about one-fourth would be ready for reclamation within the next ten years. That is to say, about 95 square miles could be reclaimed and put to cultivation within a decade. As one square mile contains 640 acres and one acre six *mow*, so 95 square miles will equal to 364,800 *mow*. As cultivated land in this part of China generally costs more than fifty dollars a *mow*, so, if fifty dollars be taken as the average rate, the value of these 364,800 *mow* would amount to $18,240,000. This will help a great deal to defray the expenses of improving the waterway for navigation and for preventing floods in this Delta.

(*b*) THE WEST RIVER.

The West River is at present navigable for comparatively large river steamers up to Wuchow, a distance of 220 miles by water from Canton, and for small steamers up to Nanning, a distance of 500 miles from Canton, at all seasons. As for small crafts, the West River is navigable in most of its branches, west to the Yunnan frontier, north to Kweichow, northeast to Hunan and the Yangtze Valley by the Shingan Canal.



MAP V

In improving the West River for navigation I shall divide the work into subsections as follows:—

(1) From Samshui to Wuchow.
(2) From Wuchow to the junction of the Liukiang.
(3) Kweikiang or the North Branch of the West River from Wuchow to Kweilin and beyond.
(4) The South Branch from Shunchow to Nanning.

(1) From Samshui to Wuchow. This part of the West River is generally deep and does not need much improvement for vessels up to ten-foot draught excepting at a few points. The midstream rocks should be blasted and removed and sand banks and dilating parts should be regulated by submerged dykes to secure a uniform channel and to make the velocity of the current even, so that a stable fairway could be maintained all the year round. The traffic of this river would be sufficiently great to pay for all the improvements which we propose to make.

(2) From Wuchow to the Junction of Liukiang. At this junction, a river port should be built to connect the deep navigation from the sea and the shallow navigation of Hungshui Kiang and the Liukiang which penetrate the rich mineral districts of Northwest Kwangsi and Southwest Kweichow. This port will be about fifty miles from Shunchow which is the junction of the Nanning branch of the river. So here we have only to improve a distance of fifty miles, for the improvement of the river between Shunchow and Wuchow will be included in the plan for the Nanning Port. Dams and locks would be necessary to make this part of the river navigable for ten-foot draught vessels. But these dams at the same time would serve the purpose of producing water power.

(3) Kweikiang or the North Branch of the West River from Wuchow to Kweilin and beyond. The improvement of Kweikiang is more difficult for, as Kweikiang is smaller, shallower and has more rapids along its course, its improvement will be more difficult than that of the other parts of the waterway. But this will be a very profitable proposition in this Southern waterway project, for this river not only serves the purpose of transportation in this rich territory but will serve as a psasage for through traffic between the Yangtze and the West River valleys. The improvement should commence from the junction at Wuchow up to Kweilin, and thence upward to the Shingan canal, then downward to the Shang River, and thereby connecting with the Yangtzekiang. A series of dams and locks should be built for vessels to ascend to the interwater shed canal and another series should descend on the other side. The expenses of building these two series of dams and locks could not be estimated until accurate surveys are made. But I am sure this project will be a paying one.

(4) From Shanchow to Nanning. This portion of the Yuhkiang is navigable for small steamers up to Nanning, the centre of commerce in South Kwangsi. From Nanning small crafts can navigate through the Yuhkiang as far as the east border of Yunnan, and through Tsokiang as far as the north border of Tongking. If this waterway be improved up to Nanning, then it would be the nearest deep river port for the rich mineral districts of the whole southwest corner of China, which includes the whole province of Yunnan, a greater part of Kweichow and half of Kwangsi. The immediate neighborhood of Nanning is also very rich in minerals, such as antimony, tin, iron, coal and also in agricultural products. So to make Nanning the head of a deep water communication system will be a paying proposition. To improve the waterway up to Nanning, a few dams and locks along its course will have to be built for vessels of ten-foot draught to go up as well as for water power. The expense for this work cannot be estimated without detailed surveys but it would probably be much less than the improvement of Kweikiang from Wuchow to the Shingam Canal.

(c) The North River.

The North River from Samshui to Shiuchow is about 140 miles long. The greater part of its course is confined in the hilly districts, but after it emerges out of the Tsingyuen Gorge it comes in to a wide, open country, which connects with the plain of Canton. Here the dangerous floods occur most often. Since the silting up of its proper outlet below Sainam, the North River from that point up to the gorge has become shallower every year, so the dykes at the left side, that is, on the side of the plain, often break thus causing the inundation of the whole plain above Canton. Thus the regulating of the river at this part has two aspects to be considered: First, the prevention of floods and second, the improvement for navigation. In dealing with the first aspect nothing could be better than deepening the river by dredging. In the improvement of the Canton Approach and Harbor and also of the Canton Delta, we have to cut a deep channel right from the deep sea up to Sainam. In the improvement of the lower part of the North River, we have simply to continue the cutting process higher up until we have a deep channel, say 15 to 20-ft. as far as the Tsingyuen Gorge, either by artificial or natural means. By this deepening of the bottom of the river, the present height of the dikes will be quite enough to protect the plains from being flooded

In dealing with the second aspect, as we have already deepened the part of the river from Sainam to the Tsingyuen Gorge for flood prevention, we have at the same time solved the navigation question. It has now only the upper part to be dealt with. I propose to make this river navigable up to Shiuchow, the centre of commerce as well as the centre of the coal and iron fields of Northern Kwangtung. To improve the part above the gorge for navigation, dams and locks should be built in one or two places before a ten-foot draught vessel can ascend up to that point. Although this river is parallel with the Hankow-Canton Railway, yet if the coal and iron fields of Shiuchow are properly developed, a deep waterway will still be needed for cheap transportation of such heavy freight as iron and coal to the coast So to build dams for water power and to construct locks for navigation in this river will be a profitable undertaking as well as a necessary condition for the development of this part of the country.

(d) The East River.

The East River is navigable for shallow crafts up to Laolung Sze, a distance of about 170 miles from the estuary at the lower point of Davids Island near Whampoa. Along its upper course, rich iron and coal deposits are found. Iron has been mined here since time immemorial. At present most of the utensils used in this province are manufactured from the iron mined. So to make a deep navigable waterway up to these iron and coal fields will be most remunerative.

To improve the East River for navigation as well as for flood prevention, I propose to start the work at the lower point of Davids Island as stated in the improvement of the Canton Approach. From here, a deep channel should be dredged up to Suntang, and a mile above that point a new channel should be opened in the direction of Tungkun city, by connecting the various arms of water between these two places and joining the left branch of the East River immediately above Tungkun city. All other channels leading from this new channel to the Pearl River should be closed up to normal water level so as to make these closed-up channels serve as flood outlets in rainy seasons. Thus by blocking up the rest of the estuaries of the East River, all the water would form one strong current which will dredge the river bottom deeper, and maintain the depth permanently. The body of the river should be trained to a uniform width right along its course up to tidal point, and above this point, the river should be narrowed in proportion to its volume of water. Thus the whole river would dredge itself deep far up above Waichow city. The railway bridge at the south side of Shelung should be made a turning bridge so as to permit large steamers to pass through it. Some sharp turns of the river should be reduced to gentle curves and midstream obstacles should be removed. The portion of the river above Waichow should be provided with dams and locks so as to enable ten-foot draught vessels to ascend as near as possible to the iron and coal fields in the valley.

Part III.—The Construction of the Southwestern Railway System will be published in next issue.—Ed

Projected Railway to Serve Tsingtao

EARLY in March arrangements were made by the Board of Communications at Peking for the despatch of a party of engineers to survey the route between Shihchiachuang and Tehchow. This line is projected in connection with the flotation of a Chinese domestic loan of some $30,000,000 bearing interest at 8 per cent. As the construction of a railway in connection with a Chinese domestic loan is a novelty prominent Chinese are endeavoring to discover an explanation for it. The Government itself makes the following statement in the Official Gazette:—

"The Peking-Hankow and the Tientsin-Pukow railways are trunk lines running from north to south, crossed by the Lung-Hai line. The present condition, however, is hardly adequate to satisfy the growing demand of the people of Chihli, Shantung and Shansi Provinces, where production is abundant and business is in a prosperous condition. To meet the situation, the Government purposes to build a railway connecting Shihchiachuang on the Peking-Hankow line with Tehchow on the Tientsin-Pukow railway for a distance of 350 *li*, so as to facilitate communication, not only between the two lines, but with the Grand Canal. This will prove an impetus to the development of the local industries. The topography of the region through which the proposed line is to be built being level, there will be no engineering difficulties and a sum of ten million dollars will be sufficient for its construction. Again, the balance of the Peking-Hankow Redemption Loan and interest thereto amounting to $2,300,000, and another loan amounting to $1,200,000, secured on the Peking-Suiyuan railway, are to be redeemed during the 9th Year of the Republic, and the date for payment drawing near, the Communications Department must make preparations before the payment falls due. In addition; the deficit of the postal, railway, telegraph and steamship administrations during the 8th year having amounted to over 29 million dollars, there is the necessity for the Department of raising the proposed loan."

This explanation does not, according to Chinese who ought know, cover the real object of the loan. They claim that the inclusion of the projected railway is to induce Japanese capitalists to take up the loan bonds in order to secure the construction of a railway which will give almost direct communication between the iron and coal fields of Shansi province and the port of Tsingtao. Already the Japanese have a contract with the Chinese Government for the construction of a railway from the northern side of the Yellow River near Tsinanfu to Shuntehfu, on the Peking-Hankow railway. This line will not serve Japanese interests as well as the one from Tehchow to Shihchiachuang.

The projected railway will connect at Shihchiachuang with the existing narrow gauge line running to Taiyuanfu, which taps a portion of the iron and coal measures of Shansi.

It is argued that Japanese capitalists will secure big advantages by taking up the domestic loan. In the first place the interest is 8 per cent., and no doubt there will be a big discount on the price of the bonds. The Peking Government will do anything to get money at this juncture, and in addition to the discount, it is certain that if the Japanese make stipulations regarding the construction and control of the projected railway the Government will grant them. On the other hand, Japanese capitalists will not benefit as much if they issue a loan to construct the proposed railway from Tsinanfu to Shuntehfu. Railway loans in China are generally made at low interest and less discount than domestic loans, and in addition there are distinct advantages to Japan to have a line built which will immediately tap the mineral resources of Western China, which the road to Shuntehfu would not do.

Certain Chinese organizations are already protesting against the issue of this loan and the purposes for which it is to be used. They know that no Chinese will subscribe anywhere near the amount of the loan, and that, therefore, the railway must be included with the object of inducing others to take up the bonds —and the others most interested in the project are, of course, the Japanese, who will leave no stone unturned to secure access to iron deposits, particularly if other natural products can also be attracted to Tsingtao for shipment. The progress of this loan will be closely watched not only by Chinese but by all foreigners interested in the development of Chinese industries, etc.

The original intention was to build a line from Shihchiachuang to Tientsin, connecting with the Tientsin-Pukow line at Tsangchow, but at the last moment this scheme was turned down in favor of the one to Tehchow. The distance between Shihchiachuang and Tientsin, viâ Tsangchow, is about 160 miles, while from Shihchiachuang to Tehchow it is 230 miles. From Shihchiachuang to Tsingtao, viâ Tsangchow the distance is some 429 miles, while it is 360 miles from Shihchiachuang to Tsingtao viâ Tehchow. Another project that has priority in a sense is the old one of a line from Paotingfu, on the Peking-Hankow Railway, to Tientsin direct, and this seems to be the logical one if economy is to be practised in the development of railways in China. Only about 80 miles of construction would be necessary, we believe, to effect this link-up. In a nut shell the proposition as now under consideration will make Tsingtao the port of shipment for minerals from Shansi, and will cut Tientsin out of opportunities expected from the development of the hinterland which would be traversed by a railway from Shihchiachuang to Tsangchow.

Commenting on the commercial possibilities of the route the "China Advertiser," a Japanese paper, says as follows: "There are no articles worth mentioning which are transported over the Shihchiachuang-Tehchow Route, except straw-braid from Tehchow, and furs and hides from Hengshui and Tahsinchi. Towns and villages found on the line not being in a prosperous state, it will take some time before large mills of any kind can be worked in the district.

"At present, exports chiefly consist of cereals, cotton, groundnut-oil and fruits, which are shipped mostly by junks. But when the proposed railway is built, coal, iron and lime produced in abundance in the western portion can be brought to the eastern part of the country. The principal advantage of the line is the fact that the line can be laid without requiring much capital, with every prospect of bringing large returns.

"Railway receipts will be considerably increased by the construction of the proposed line, because both the Tientsin-Pukow and the Shihchiachuang-Taiyuan Railways being connected by it, goods shipped from Shanghai can at once be sent into the heart of Shansi. A similar benefit will not be enjoyed by the Peking-Hankow Railway, although to it the new line likewise serves as a branch. Goods are now being carried to the north by the Peking-Hankow route, those coming from Shansi being loaded at Shihchiachuang. But the new line will take the shipment from Shansi down to Tehchow, whence by the Grand Canal to Tientsin at less expense. From the financial view-point of the new line alone, however, the scheme will prove a success, because it will connect with the Chengting-Taiyuan Railway and cross the Peking-Hankow and the Tientsin-Pukow Railways, and establish a link between the three lines, to say nothing of the transportation of articles produced in regions along the route."

It will be observed that in these comments reference to Tsingtao, and the possible transportation thereto of minerals from Shansi Province, is carefully avoided, while the paper goes out of its way to mention that goods can be brought to Techow, and thence to Tientsin by the Grand Canal at less expense than formerly. This is a clumsy effort to divert public attention from the real object of the projected railway, but it is not likely to succeed.

Already protests against the project are being lodged by Chinese at Tientsin, as the original scheme was to build a line from Shihchiachuang to a point not far from Tientsin in order to reach the nearest seaport. The new proposal will cut Tientsin out for the benefit of Tsingtao.

A Supreme Council of Four sitting in secret in Paris drafted and signed an epoch-making document, and then said to the advisory half of the constitutional treaty-making power of the United States, "sign here on the dotted line." Could the Czar, Kaiser, Huangti or Shogun in the heyday of their autocratic powers, have acted in a more arbitrary and contemptuous manner, in defiance of the people's right, than did President Wilson in this matter?

Is it any wonder that the worm at last turned? The "Poor Fish" of the Republican Senate refused to bite. Four years of patient waiting, eating out their hearts with a patriotic and commendable desire to give their best to their country, discriminated against, abused, maligned, slandered, insulted and ignored, the Republican majority turned on the dictator. The experience had left an indelible mark upon the Republican leaders and aroused the intense hostility of the party at large. Can the world wonder at the result? Can it censure the group of "bitter-enders" who have sworn to kill the treaty, and so place on record their patriotic adhesion to the constitution, flouted and overridden in this insane desire to ram down the throats of the Senators, the personal will of the President?

The Republican party is sore. There is no use trying to disguise this fact. For the first time under the constitution, its leaders have shown a determination to use its power. The treaty is dead. The Knox proposal to declare peace with Germany has passed the Senate Committee on Foreign Affairs. It may pass the Senate and be rejected by the President. It or some compromise may be passed over his veto by a two-thirds vote. And then, what? Already are heard rumblings of impeachment proceedings. The President is accused of "failing to faithfully perform his duties, that he has not in good faith endeavored to preserve, protect, and defend the Constitution of the United States. That acting to the contrary, he has endeavored to thwart, contravene, frustrate, and defeat the Constitution, and its purpose." He is accused of contriving with others to bring about and affixing his signature to, so much of the Treaty of Versailles as embraces the Covenant of the League of Nations, has deliberately attempted to subject the Congress of the United States to a jurisdiction foreign to our constitution and unacknowledged by our laws. By word and act he has shown contempt for the Senate of the United States; he has sought by inciting the uninformed to clamor against the lawful use of the authority thereof, and by threats, to diminish the prestige and authority of a coequal organ of the government. This he had done in the attempt to deprive the Senate of the untrammelled use of the powers by which it is enabled to discharge essential duties imposed upon it by the constitution, in order that he may unlawfully possess himself of these powers, to the end that he should himself become the uncontrolled master of our foreign relations. Moreover, he has heaped contumely upon members of the Senate engaged in the discharge of their duties, and has sought thereby to bring members of that body who respect the sovereignty of their respective States, into disrepute, to the jeopardy of that sovereignty and of the respect for government and law and the rights of the States upon which the security of the nation depends. Still, these rumblings presage the coming storm. This may be accepted as the sentiment of many Republicans, but it will hardly receive serious attention.

The Japanese Privy Council voted for the impeachment of their delegation, because it surrendered vital points of sovereignty and equality. Only the absence of any legislative machinery in Japan for this purpose, has freed the Delegation from answering to the people for their mistakes. The machinery for impeachment exists in the United States. A President can go so far and no further. The fight for the preservation of the American Constitution is not finished. Out of consideration for his undoubted high motives, the President may escape legislative censure. Then the issue will be carried to the polls. THE CONSTITUTION! will be the campaign slogan of the Republican party this coming year.

The American people recognize their duty to those they have fought with, but their first duty is to themselves. If the Treaty is passed as it is written, and the President emerges victorious from the conflict, the days of the great American Republic are numbered. From free citizens of a glorious democracy, Americans will be converted into the subjects of autocrats wearing concealed underneath the sleek, glossy, exterior of a high-silk hat the ponderous crown of a Muscovite Czar.

Chinese Railway Technics Commission

The first session of the Preliminary Engineering Conference of the Commission on Railway Technics was begun on February 14 in the Ministry of Communications, Peking. It was personally attended by Minister Tseng to emphasize its importance.

The opening address was given by the Chairman of the Commission on Railway Technics, M. H. Shen. In the course of it he briefly reviewed the importance of the unification of railway technics and engineering, and the history leading to the organization of the Commission. He paid a tribute to the late Dr. Jiem Tien-yu, former Chairman of the Commission, who had rendered no small assistance as its inception.

The Minister of Communications also spoke pledging his support to make the Commission a success. The other speaker of the occasion was Mr. Whang, Chief of the Traffic Department and Director-general of the Chinese Government Railways.

The four foreign advisers who were specially engaged in connection with the Commission on Railway Technics were present. They were T. R. Johnson, British Adviser; F. H. Clark, American Adviser; S. Hirai, Japanese Adviser; and P. Painleve, French Adviser. Among those who attended the meeting were:

J. F. Yu, Vice-chairman.
T. C. Li, Vice-chairman.
Thomas Sze, General Secretary.
T. T. Hoa, Member-in-Charge, Committee on Engineering.
E. F. Wei, Member-in-Charge, Committee on Mechanics.
C. S. Liu, Member-in-Charge, Committee on Traffic.
C. Chang, Member-in-Charge, Committee on General Affairs.
T. R. Johnson, Adviser.
F. H. Clark, Adviser.
S. Hirai, Adviser.
P. Painleve, Adviser.
A. Taton, Delegue de M. Painleve.
L. Dethieu, Chief Engineer, Maintenance Department, Peking-Hankow Line, Member of the Commission.
T. King, Resident-Member.
E. K. Denn, ,,
J. S. Suen, ,,
H. Ouang, ,,
H. W. Ho, ,,
T. T. P'ou, ,,
Y. C. Yew, ,,
P. S. Tang, Resident-Member and French Secretary.
V. T. Paw, Resident-Member.
W. F. Wang, ,,
H. H. Ling, ,,
E. H. Sze, Japanese Secretary.
B. Bellion, English and French Secretary.
B. J. Boothby, Engineer-in-Chief, Canton-Kowloon Line.
E. Bonnevey, Engineer-in-Chief, Lunghai-Pienlo Line.
G. Bouillard, Adviser, Peking-Hankow Line.
C. J. Carroll, Acting Engineer-in-Chief, Hankow-Ichang Section, Hankow-Szechuan Line.
C. L. Chai, Chief of Engineering Department, Peking-Hankow-Suiyuan Line.
A. G. Cox, Engineer-in-Chief, Hupeh-Hunan Section, Canton-Hankow Line.
E. C. A. Dunn, Engineer, Way and Works, Taokow-Chinghua Line.
D. P. Griffith, Acting Engineer-in-Chief, Shanghai-Nanking and Shanghai-Hangchow-Ningpo Line.
A. R. J. Hearne, District Engineer-in-Chief, Tientsin-Pukow Line.
T. Hu, Chief of Engineering Department, Chuchow-Chinchow Line.
de Laperiero, Acting Engineer-in-Chief, Cheng-Tai Line.
C. S. Wang, Assistant Chief of Engineering Department, Peking Department, Peking-Hankow-Suiyuan Line.
J. E. R. Peebles, Resident Engineer, Chuchow-Pinghsiang Line.
Shisato, Engineer-in-Chief, Seu-Tsen Line.
D. P. Ricketts, Engineer-in-Chief, Peking-Mukden Line.
Shemidsu, Resident Engineer, Kirin-Changchun Line.
J. S. Wang, Managing Director, Chanchow-Amoy Line.
M. Sullivan, Acting Engineer-in-Chief, Chuchow-Chinchow Line.
J. N. Yu, District Engineer-in-Chief, Tientsin-Pukow Line.

The preliminary engineering conference lasted several days. The subjects for discussion during its sessions were (1) Standard Construction Gauge, (2) Cross-sections of railways, (3) Permanent ways, (4) Switches and crossings or frogs, and (5) Steel bridge constructions. These are main subjects which are subdivided.

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The New British Minister to Peking

The appointment of Mr. Beilby Alston as British Minister to Peking to succeed the Right Hon. Sir John Jordan will be acclaimed by his friends. Mr. Alston, who is at present British Minister in Tokyo, brings personal knowledge of both Japan and China to his task, as well as long experience in the diplomatic service of his country. He is thus peculiarly equipped to meet the new conditions which are gradually developing in this quarter of the globe, and will prove a competent guardian of British interests. Mr. Alston is keenly alive to the vital importance of the questions developing in China and the Far East; fully realizes the onerousness of the post which he will occupy, and has the diplomatic flair to enable him to deal with the problems which will confront him. He was born in October, 1868, and is the second son of Sir Francis Alston, K.C.M.G., also of the diplomatic service. He entered the service of his country at the age of 21, since when he has had considerable experience in posts as varied as the countries which he has visited. His first post abroad was at Copenhagen, where, in 1895, he went as third Secretary in the diplomatic service. In 1896 he was made Secretary to the British Plenipotentiaries at the Copyright Conference in Paris, and later in the same year was transferred to Buenos Ayres as acting second secretary, and also officiated as Charge d'Affaires. In 1898 he was appointed Secretary to the British representative at the Brussels Sugar Conference, and was similarly appointed to the conference in 1901-2. At the time of the Coronation of the late King Edward he was attached to the foreign representatives accredited to attend the ceremonies. In 1906 he accompanied Sir Henry Austin Lee in a tour of the consular offices of France, and in 1909 was appointed attache to the Chinese Naval Mission under Prince Zai Sun on its visit to England. He had a similar appointment with Prince Tsai Chen who attended the coronation of King George V. In the same year he went to Siam as secretary to Prince Alexander of Teck's Mission to the coronation of the King of Siam, with rank of Acting-Councillor in the Diplomatic Service, and later was sent to Peking as Acting Councillor of Legation with regard to an inquiry into the leases in British Concessions in China. He visited Japan, returned to the Foreign Office in London, and in 1913 was again appointed Acting-Councillor at Peking, and acted as Charge d'Affaires. In 1916 he again acted as Charge d'Affaires, which duties he carried out for about a year during the absence of Sir John Jordan in England. Upon Sir John's return Mr. Alston accompanied the British High Commissioner to Siberia, and upon his return was given the rank of Minister Plenipotentiary to Japan, a position which he will vacate to return to Peking. He will take up his duties in the Chinese Capital with the best wishes of all interested in the development of affairs in China, and with these we join in wishing him a distinguished career.

Chinese Eastern Railway Control

There has been a great deal of trouble in connection with the control of the Chinese Eastern Railway, but by March 17, the Chinese authorities managed to secure dominance in the direction of affairs. On that date a strike of railway employees ended and found the Chinese flag flying in place of the Russian. The workmen considered that the strike ended in a complete victory for their cause, inasmuch as the Commander of the Chinese troops indicated that the Chinese authorities were sympathetic with the revolutionary movement. The authorities of the present Siberian Government recognized the Chinese sovereignty over the Chinese Eastern Railway and urged the dismissal of General Hovarth, who previously directed the affairs of the railway, and the appointment of a Chinese manager of the railway in his place.

This railway has been a bone of contention during the whole course of the Russian trouble, and perhaps now that the Chinese have managed to secure control, the international scramble will cease for the time being at least.

General Horvath had all along strongly maintained that in view of the close proximity of the Chinese Eastern Railway to the South Manchuria Railway, there is no possibility of restoring the police power to China, even though the Line may be redeemed The General alleged in support of his argument certain treaties concluded between the Governments of Russia and Japan, which cannot be applicable on this occasion. TThe General insisted on having 30,000 Russian police but this number was criticised by the Kirin Tuchun as being superfluous and only consented to the maintenance of 500 Russian police, which may be alloted special duties, such as, guarding the various stations, the treasury, the locomotive workshop, and general store. As a result of the strong protest on the part of the Tuchun, who is supported by all logical arguments, the Russian authorities made a compromise by consenting to have the Chinese counter-proposal discussed with a view of arriving at a definite decision, that would be satisfactory to all parties concerned. This, they did, and on the 26th of February, the point in dispute was at length settled satisfactorily between the General and the Tuchun. The Tuchun, as well as the Civil Governor of Kirin, both acting under the directions of Governor-General Chang Tsao-lin, behaved excellently well in this instance; their actions and promtitude in effecting such a satisfactory conclusion deserves high commendation and praise. It speaks for the loyalty of the respective authorities, who have the interest of the Republic at heart. The American Legation at Peking, in a communication to the Chinese Foreign Office, highly approved of the actions taken by the Chinese Government in accepting the proposal of the Kirin Tuchun regarding the control of the railway. The American authorities hope that the Government will see its way to extending to foreigners as well as Chinese adequate protection and travelling facilities.

The following is the proclamation issued by General Pao Kuei-ching, President of the Board of Directors of the Chinese Eastern Railway:—"I have frequently pointed out that the Chinese Eastern Railway is situated in Chinese territory in which the existence of other government power is inadmissible, as there is strife between Russian political parties, which creates disorders and interferes with the work of the railway. Owing to the fact that General Horvath, Assistant President of the above board, has assumed the functions of government and proceeded to adopt a policy of military force for political aims, the Russian working population has declared a strike and begun a revolutionary movement. In order to defend China's sovereign rights and maintain normal conditions on the railway, I have suggested that General Horvath shall renounce full political power in the railway territory so as to enable China to fulfil her obligations. All arms are to be handed over to and guarded by specially appointed agents. At the same time I consider it my duty to declare that I cannot allow in future any Russian party or individual to interfere with the work of the railway for political purposes. I therefore request the population on the railway territory to proceed with their peaceful work."

Shanghai Tramway Returns

The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for the month of February, 1920, and for two months ended 29th February, 1920, with figures for the corresponding periods last year:—

	February, 1920	February, 1919
Gross Receipts	$177,640.81	$139,937 52
Loss by currency depreciation...	43,900.64	34,259.55
Effective Receipts ... ...Mex.	$133,740.17	Mex. $105,677.97
Percentage of loss by currency depreciation	26.05	25.73
Car Miles run	365,922	317,065
Passengers Carried	7,846,030	6,248,940
	2 Months ended 29th February, 1920	2 Months ended 28th February, 1919
Gross Receipts	$359,534.10	$299,016.52
Loss by currency depreciation...	89,846.27	70,949.16
Effective Receipts ... ...Mex.	$269,687.83	Mex. $228,067.36
Percentage of loss by currency depreciation	26.34	24.98
Car Miles run	759,203	677,855
Passengers Carried	15,998,747	13,482,476

Engineering, Financial, Industrial and Commercial News

RAILWAYS

Tube for Tokyo.—It has already been reported that an underground railway scheme is proposed in Tokyo and it is now stated that official permission has been granted and the promoters are putting their ideas into form. As a first step towards the completion of the scheme, an underground line will be constructed from the Shinagawa terminus of the Keihin (Tokyo-Yokohama) Electric Line to Kaminarimon, an entrance to Asakusa Park, with a branch line, separating from the main line at Kurumasaka, Shitaya, to connect with the surface lines at Minami-Senju. It may be noted that the company is capitalised at Y.40,000,000 and is named the Tokyo Chika Tetsudo Kabushiki Kaisha. The Company was promoted by Mr. Hayakawa Tokuji and others.

Siam Extension.—Siamese State Railways are to be extended from Koorat to Ubon passing through Buriram, Suriu, and Sisatlet. A survey is now being made of the new line.

Swatow-Chaochowfu Line.—The Swatow-Chaochowfu Railway (26 miles long) operated at a loss. Although the number of passengers carried increased about 30 per cent., the receipts were considerably below those of 1917. This was due principally to the necessity of carrying soldiers free of charge. Freight receipts, always unimportant, were much the same as in previous years.

The Swatow-Changlin Light Railway, a push-car line for carrying passengers, extended its track as far as Chenghai, a distance of 10 miles from Swatow. It is reported that the company plans to double-track the line as soon as profits permit, when it will also be used to carry light freight. The company erected during the year a one-wire telephone line along the railway for its own use. It is reported that another light railway line will be constructed between Chaoyang and the landing place of the Swatow launches.

Chinchow-Jehol Project.—A Chinese news agency states that the Government has decided to construct a railway from Chinchow to Jehol in connection with the construction of Hulutao port, and that Chow Chou-hsiang will be director both of the railway and of the port.

Japan Takes Advantage of Railway Situation.—The "Peking Leader" says: The proposed scheme for the construction of the Hei-Ping Railway (North Manchuria) was formerly floated by Russian capitalists and the Russo-Asiatic Bank undertook to provide China with the required funds. On account of the recent revolution in Russia, the Russian authorities found it impossible to render service to China. Accordingly, the Japanese financiers were approached by the Representative of the Russo-Asiatic Bank in Peking, with a view of extending to China in equal shares the necessary capital for starting the construction work of the line in question. Owing to certain political questions, which prevented the Government from negotiating with the representative of the Russo-Asiatic Bank, the proposal thus advanced by the Russian authorities was not accepted. Meanwhile, the Japanese capitalists are quite willing to take advantage of the situation, and are prepared to finance China single-handedly in this special instance.

Increase of Railway Transport Capacity.—Aside from the construction of about 1,000 freight cars to be transferred from the current financial year, the Japanese Imperial Government Railways expects to build about 1,600 new freight cars of a 10-ton capacity. Besides, many small freight cars are to be reassembled. The result will be that in the next financial year, the Railway Board will have its transport capacity increased by about 30,000 tons in all.

Japanese Railway Receipts.—The latest official returns of the Government railways show the amount of passenger receipts for the ten months from April 1, 1919 to January 31 this year to have amounted to Y.130,154,808 and the freight receipts to Y.107,761,474, making a grand total of Y.237,916,362. This is a gain of Y.50,872,390, the gain in passenger receipts being Y.31,780,061 and in freight receipts Y.19,093,329 over the corresponding period of last year. The receipts for January 1920 totalled Y.23,804,488, an increase of Y.5,749,951 over that of January 1919.

Tientsin-Pukow Tickets.—The Tientsin-Pukow Line of the Chinese Government Railways is now issuing periodical tickets of one, three, six and 12 months.

South Manchuria Railway Company.—The South Manchuria Railway Company has decided to increase its capital from Yen 200,000,000 to Yen 240,000,000.

American Locomotive Export Combine.—Two big equipment manufacturing companies, the American and the Baldwin Locomotive companies, have formed an organization to be known as the Locomotive Export Association under the provisions of the Webb-Pomerene act to handle some of the foreign business of those companies. The organization was formed primarily to take care of the order for 150 locomotives for the Belgian Government, which has been divided between them. That order originally went to the American Locomotive Company, but because of the necessity for early delivery it became necessary to divide the order with the Baldwin company. In order to work in conjunction on a foreign order, the companies were compelled under the Webb-Pomerene act to form the association. None of its officers has been elected, its management being vested in two representatives of each company. Although no definite plans for the new organization have been worked out in detail, it is considered probable that the two equipment manufacturers will continue the association to handle other foreign business soon.

Although there is now no connection between the formation of the association and the long talked of equipment export combination, in which all of the important equipment producers planned to participate, it is considered probable in some quarters that the new company formed by the Baldwin and American Locomotive interests may become the nucleus for the greater organization. In the formation of the new concern the companies had in mind only their immediate needs respecting the Belgian orders, it was stated, but the long discussed plans for the larger company, which would include also the American Car and Foundry Company and others, may, it is said, grow out of the new organization.

Living Buddha Supports Kalgan-Kiakhta Railway Scheme.—The Living Buddha of Urga has despatched a telegram to the Peking Government stating that the project which the Government has formulated for the construction of the Kalgan-Kiakhta Railway has met with the hearty support of the different princes in Outer Mongolia, who fully realise the importance of such a scheme, as the construction of the new line will remove much of the transportation difficulties that now exist in Mongolia. Large sums are being subscribed by the princes of the different Leagues in Outer Mongolia as capital for the construction of the line, and the Living Buddha himself will undertake to raise one-tenth of the whole amount of the funds required for construction.

New Locomotives for Japan Railways.—Twelve new locomotives capable of hauling a train of 13 cars as compared with 9 by present locomotives, were to have been put on the Tokaido line during March, and others are scheduled to be in operation on the line from Tokyo to Shimonoseki before the summer.

Pukow-Sinyang Railway.—The question of resuming the work of the construction of the Pukow-Sinyang Railway has been taken up at Peking, and Mr. Hsu Shih-tsang, Director General of the Tientsin-Pukow Railway, has been appointed concurrently Director General of the new line. When the war broke out, the earthwork of this railway was well advanced, but had to be stopped owing to financial stringency.

Projected Railway in Korea.—A big railway company called the Hokusen-Tanko Tetsudo Kabushiki Kaisha is in course of organization in North Korea. The promoters, the "Seoul Press" reports, include Mr. S. Asano, well-known Tokyo business man, and a number of other leading men in Tokyo, and under date of February 25, they filed an application with the Government-General for permission to establish it. The company will be capitalised at Y.20,000,000 and aims at working the rich coal fields in North Korea. When the company is in working order, the promoters hope to lay a light railway of broad gauge, between Lajin and Hunyu, North Hamkyong Province 83 miles in length, with a view to undertaking transportation of passengers and goods on the frontier and around Chientao, besides its main object. It is the intention of the promoters to run the company without asking any subsidy from the Government-General. Mr. Asoh, a well-known mining business man of Seoul, who is one of the promoters, and several engineering experts of Tokyo will shortly visit North Korea on business connected with the surveying of the route. The capital of the company, 400,000 shares, will be entirely subscribed by promoters and supporters of the plan.

American Locomotive Company Gets Orders.—The American Locomotive Company recently closed orders for seven consolidation locomotives for the Shantung Railway, China; and four for the Imperial Taiwan Railways, Japan.

Baldwin Gets Chinese Order.—Baldwin Locomotive Co. has received an order for twelve locomotives from China, eight to be consolidated and four Pacific type engine.

Foochow Roads Extending Slowly.—Only 2 miles of roadway were constructed in and near Foochow city during the year, making a total of 30 miles built in the last three years under the direct supervision of the provincial government. About 2,000 jinriksha, 30 carriages, and 15 motor cars are now being operated on these modern roads. A large motor bus does a thriving business carrying passengers back and forth. These roads and the motor bus have become so popular that the provincial government is planning to build similar roads to Yenping, a distance of about 120 miles. At present, the only roads from Foochow are the ancient narrow stone affairs, badly in need of repairs. The building of modern roads throughout the district would be of immense benefit to the people. The total amount expended up to October, 1918, for roads was $318,000.

Amoy-Changchow Line.—The railway from Sungsu, on the mainland opposite Amoy, says a report by American Consul C. E. Gauss, runs only 17 miles in the direction of Changchow, maintaining the present railhead at Pohlam bridge. No work toward extending the line to Changchow has been done during the year. The line carries passenger traffic almost entirely, and is run at a loss by the ministry of communications. The roadbed and rolling stock are in poor condition.

While there have been many plans for roads, some with motor-bus services, and for narrow-gauge railways, discussed for this district, nothing definite has appeared, except that some roads have been constructed in the city of Changchow and a project to construct a road from Changchow to Shihma, the head of launch traffic from Amoy, is under way, although actual construction work has not begun.

It is to be hoped that some means will soon be found of opening up transport facilities with Lungyenchow—the hard-coal fields in the interior. While quantities of anthracite, which has produced splendid assays, find their way to Amoy in small boats, through the rapids and with transhipment, the quantity is not sufficiently large to give the port any standing as an anthracite coal depot.

Launch service continues to be practically the only means of communication with inland and near-by water points, from which the traveler must proceed by small boat, by chair, or on foot. The launch service was interrupted during part of the year by military operations, but is now about normal.

Tokyo Tramways.—Plans have been made to spend Yen 1,200,000 on the reconstruction of Tokyo car lines.

Siaosing-Siaoshan Railway.—Mr. Jen Yu-shan, director of the Shanghai-Hangchow-Ningpo Railway, has decided to survey a branch line between Siaoshan and Siaosing, crossing the Chientang-kiang with a steamer for the present if the line is built. The survey is expected to be completed in two months.

ROADS

Japanese Road Construction.—A great scheme of road making and improvement is being planned for Tokio, Yokohama, Kioto, Kobe, and Osaka. The expenditure for Tokio alone, extending over a period of 10 years, is estimated at Y.38,000,000, and the total estimated cost reaches an enormous figure. The undertakings will be supported by Government subsidies, one-third of the cost being provided in this way. The first part of the scheme to be undertaken will be the construction of new roads in Tokio and a great highway connecting the capital with Yokohama.

Yunnanfu to Nanning.—With the object of building a highway for a motor vehicles between Yunnanfu and Nanning, a company has been organized with a capital of $5,000,000, $1,000,000 of which is to be contributed by the provincial governments and the balance by the general public.

Road Extension Work in Shanghai.—A great deal of useful road widening and extension work has been carried out in Shanghai during 1919. The most noticeable perhaps being that of Bubbling Well Road and Yuyuen Road, forming as they do the main approach to Jessfield Park. The ever increasing traffic has brought out a fair amount of public criticism as to the inadequacy of the roads, particularly in the Central District. It is apparent to most residents that a great deal of widening is necessary. But while road widening and very costly widening is necessary, it by no means goes to the root of the trouble, viz: the absence of a good arterial road system on a scale broad enough for present and future requirements. A most necessary trunk road would lead from east to west without touching any part of the Central District: unfortunately this would involve the acquisition of land outside the Council's administrative area. The parking facilities about to be provided on the Bund should also improve conditions now obtaining in the narrow roads between the Bund and Szechuen Road. The rapid development of Shanghai: the very small areas in which land is held: the high values of land; and the number of Local Authorities and their diverse interests, all tend to complicate the road question and also the rational development of great Shanghai.

Tientsin-Peking Road.—Construction work is to be commenced upon the road from Tientsin to Peking as soon as the frost disappears, and it is expected that the work will be completed before October. The road has been surveyed and money has been raised for the initial expenditure of getting the road into shape.

SHIPBUILDING

Shipbuilding in Japan for 1920.—Notwithstanding the prevailing depression in shipping circles since the restoration of peace, the shipbuilding industry in Japan has been and is being carried on so prosperously that no shipyard can hardly receive any new orders. The reason for the boom is attributed to the fact that many new orders have since been placed by shipowners on the prospect of a fall in building material after the war. Under the circumstances, it is generally anticipated that the tonnage to be constructed in Japanese shipyards in the course of current year will reach 700,000 tons, should the material be supplied as expected. At present, the material is mostly being imported from America, part being met by domestic production. Recent strike in America by coal miners and employees of iron foundries, coupled with the steady increase in domestic demand, however, have naturally caused some delay in the shipment of goods for export and it is feared that this fact might affect the shipbuilding industry in Japan. To make the matter worse, the big iron foundry at Yawata is reported not to be in good working order, some machinery used for the manufacture of shipbuilding material being in a damaged condition. There are more facts unfavorable for the progress of the industry.

New Ships.—The ocean-going steamers built in Japan from October 1918 to October 1919 number 777 (3,759,888 tons gross) in iron vessels and 410 (768,542 tons gross) in wooden vessels.

New Steamer for Yangtze Rapids.—The Ichang-Chungking str. *Loong Mow*, built to the order of Messrs. Mackenzie & Co., Ltd., Shanghai, was launched on March 2 at Kiangnan Dockyard. The dimensions and power of the vessel are slightly greater than the other vessels engaged on this run, says "Shipping and Engineering," and it is expected she will be faster and more commodious than the best of the several steamers navigating the rapids of the Upper Yangtze. Watertight subdivision of the hull has been specially considered to safeguard as far as possible any danger of sinking in the event of the hull being holed. As a further precaution the vessel has been built to comply with the Rules and Regulations of the British Corporation for the Survey and Registry of Shipping and has been built under special survey. The vessel is fitted with twin propellers driven by triple-expansion engines supplied with steam from Messrs. Thornycroft's latest type of water-tube boilers, and has steam steering gear actuating three rudders. Accommodation is provided for a limited number of foreign and Chinese passengers.

Steamers Sold in Japan.—A contract has been signed between the Asano Shipbuilding Company and an American merchant for the sale of four vessels of 8,600 tons each now on the stocks in the Company's yard at the rate of $160 per ton. The Company is negotiating with other buyers regarding the sale of four other vessels at a higher rate on terms of July-August-September delivery.

N. Y. K. Launches Freighter.—On March 3 the new Japanese freighter *Lyons Maru* was launched at Yokohama, by Baron Kondo, president of the Nippon Yusen Kaisha. Speeches were delivered by Baron Kondo, Mr. Sakamoto, Admiral Shimamura and Mayor Kubota. The *Lyons Maru* is said to be one of the finest boats of her type ever launched. She is 10,000 tons deadweight, 58 feet beam, 34 feet moulded depth, and her contract speed is 14 knots. Her engines can develop 5,000 horsepower. She is the largest ship yet built by the Yokohama Dock Company and the first of what are known as the L type freighters. It has not been definitely decided by the company, but the *Lyons Maru* will probably be placed on the European run.

Str. "Silesia."—Str. *Silesia*, one of the three Austrian vessels detained by the Chinese Government last year as a result of the war, is reported to have been sequestrated by the Italian Government. The Vice-Minister of Foreign Affairs, to whom the question was brought by Minister Wang in Rome, has instructed the latter to approach the Italian Government, demanding for a satisfactory explanation concerning the retention of the vessel. In the absence of a satisfactory explanation on the part of the Italian Government, the Chinese Minister in Rome is instructed to lodge with the Italian Government a vigorous protest in the name of the Chinese Government. The Minister is further ordered to bring the case to the notice of the Peace Treaty, should the situation justify.

INDUSTRIAL

Another Flour Mill for Shanghai.—The Manchurian Flour Milling Company intends erecting another mill at Shanghai in view of the plentiful supply of wheat along the river Yangtze. This new project is, however, not to be managed by the company itself, but will be placed in hands of a new joint stock company capitalized at Y.3,000.000, called the Shanghai Flour Mill Company. The Manchurian Flour Milling Company will own the best part of the shares in the new company and sell only 5,000 in the market.

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The Baldwin Locomotive Works

Locomotives Recently Built for Service in China

ONE of the most important fields in the world for railway development at the present time is China, where there is urgent need for the construction of a large amount of new mileage and the material improvement of existing lines. American manufacturers of railway equipment are aiding this development by furnishing motive power, rolling stock and other supplies; and locomotives of American design are proving well qualified to meet the requirements of the Chinese lines.

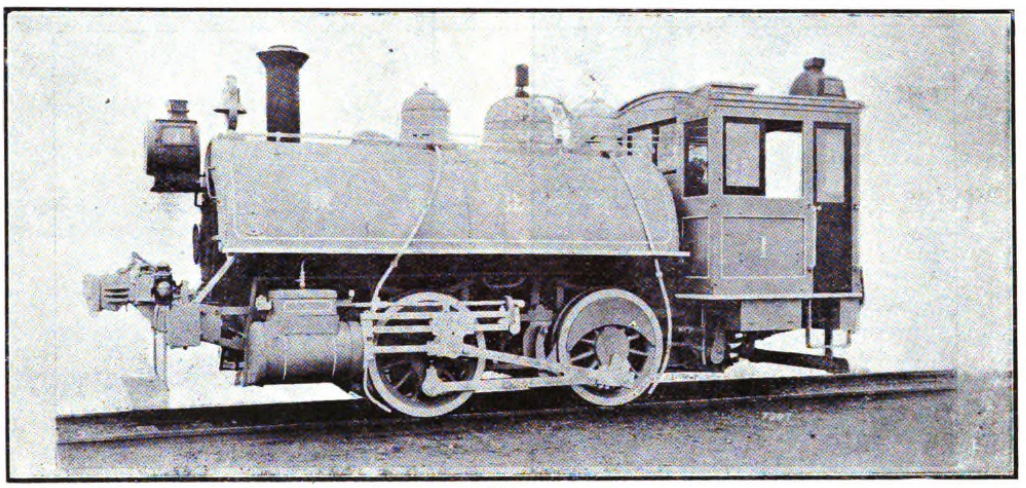


FIG. 1

During the year 1919, The Baldwin Locomotive Works built sixty-two locomotives for shipment to China. These represented twelve different types, designed for various service conditions. Five of these locomotives are shown in the accompanying illustrations.

The tank locomotives shown in Figures 1 and 2 were built for the Hupeh Government Mining Bureau, located in the Province of Hupeh. Two locomotives of each type were constructed, and they are the first engines to be placed in service on a new line. The four-coupled locomotive weighs 60,700 pounds, and has cylinders measuring 13 by 22-in., and driving-wheels 44-in. in diameter. With a short wheel-base, and all the weight on driving-wheels, this design is specially suitable for switching service. The six-coupled locomotive is considerably larger, and with a two-wheeled radial truck at each end, is suitable not only for switching, but also for local freight and passenger service. This wheel arrangement permits the locomotive to be operated in either direction without turning, and is specially suitable for service on lines having sharp and frequent curves. The total weight of this locomotive is 122,500 pounds, of which the driving wheels carry 96,500 pounds. The cylinders are 16-in. in diameter by 24-in. stroke, and the driving wheels are 44-in. in diameter.

Both these locomotives are of standard gauge, and are designed in accordance with American practice.

Figure 3 represents a locomotive of the eight-wheeled or "American" type, built for the Canton-Samshui Railway. This road handles an important passenger service, but the train loads are not very heavy, and a locomotive of this design is of ample capacity. The eight-wheeled type, when used for work that is within its capacity, is exceedingly efficient and economical to operate; and this locomotive represents the best practice for an engine of its weight designed to use saturated steam. The cylinder dimensions are 17 by 24-in., and the driving-wheels are 66-in. in diameter. The total weight of the locomotive in working order is 111,200 pounds, and the tender weighs 70,000 pounds additional.

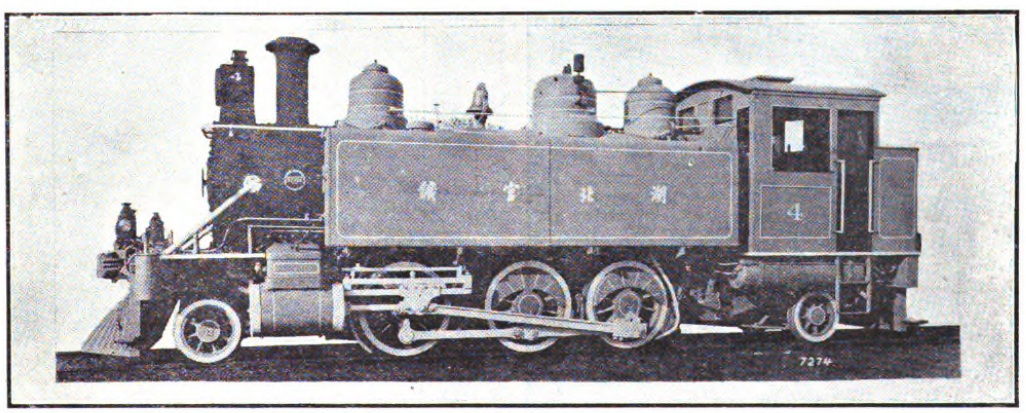


FIG. 2

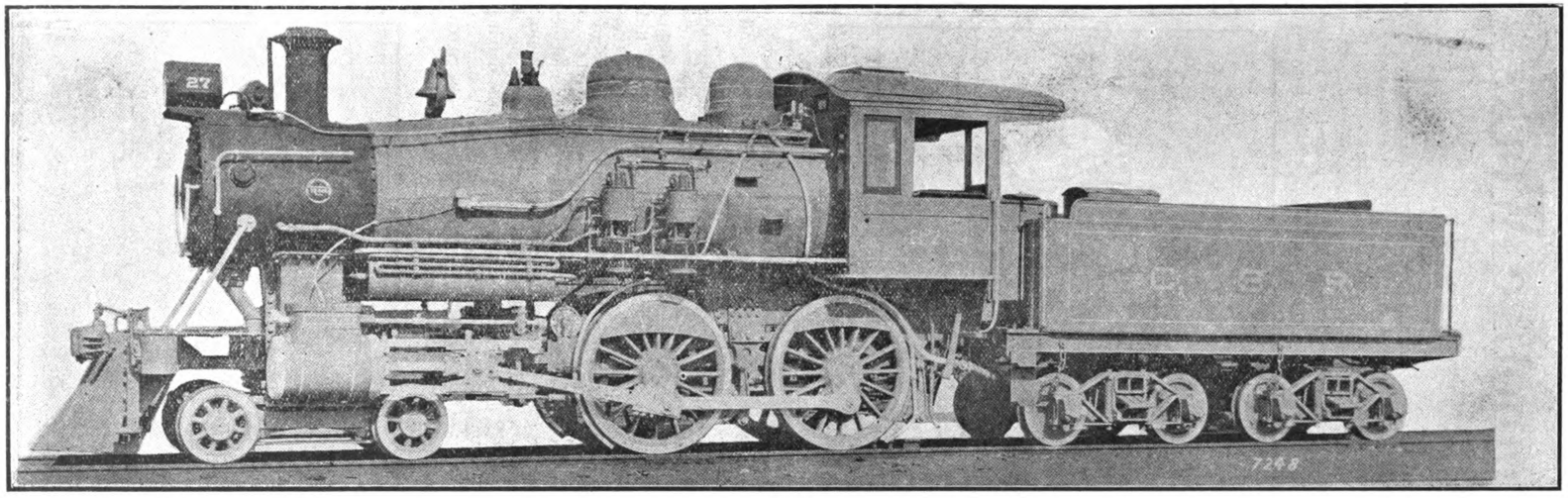


FIG. 3

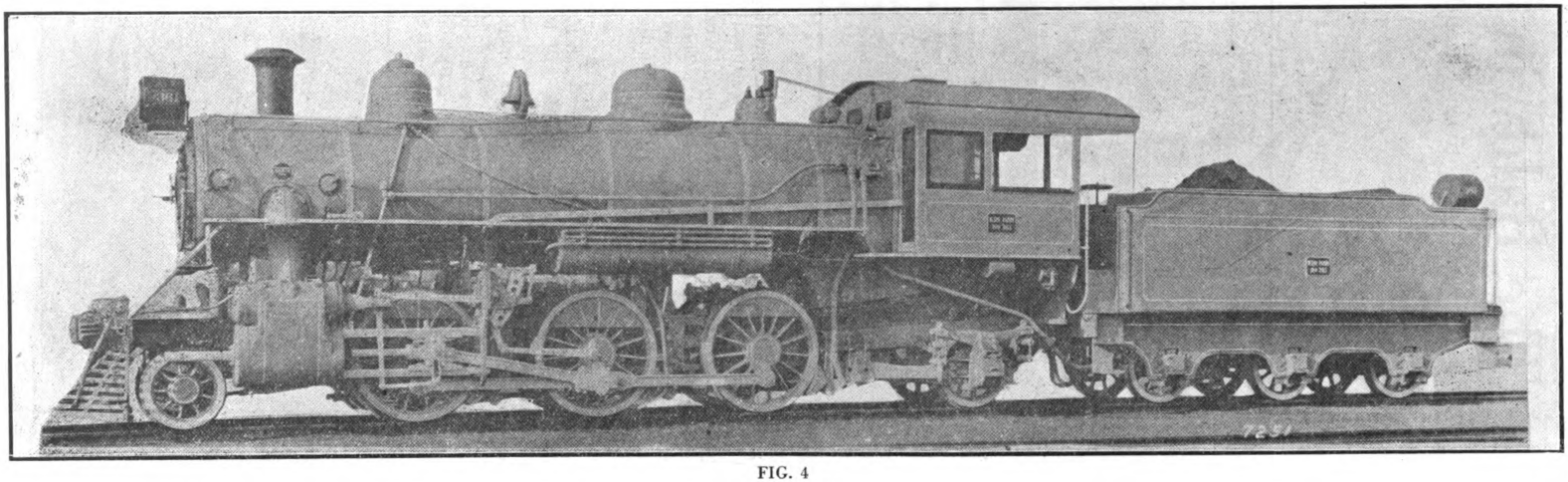


FIG. 4

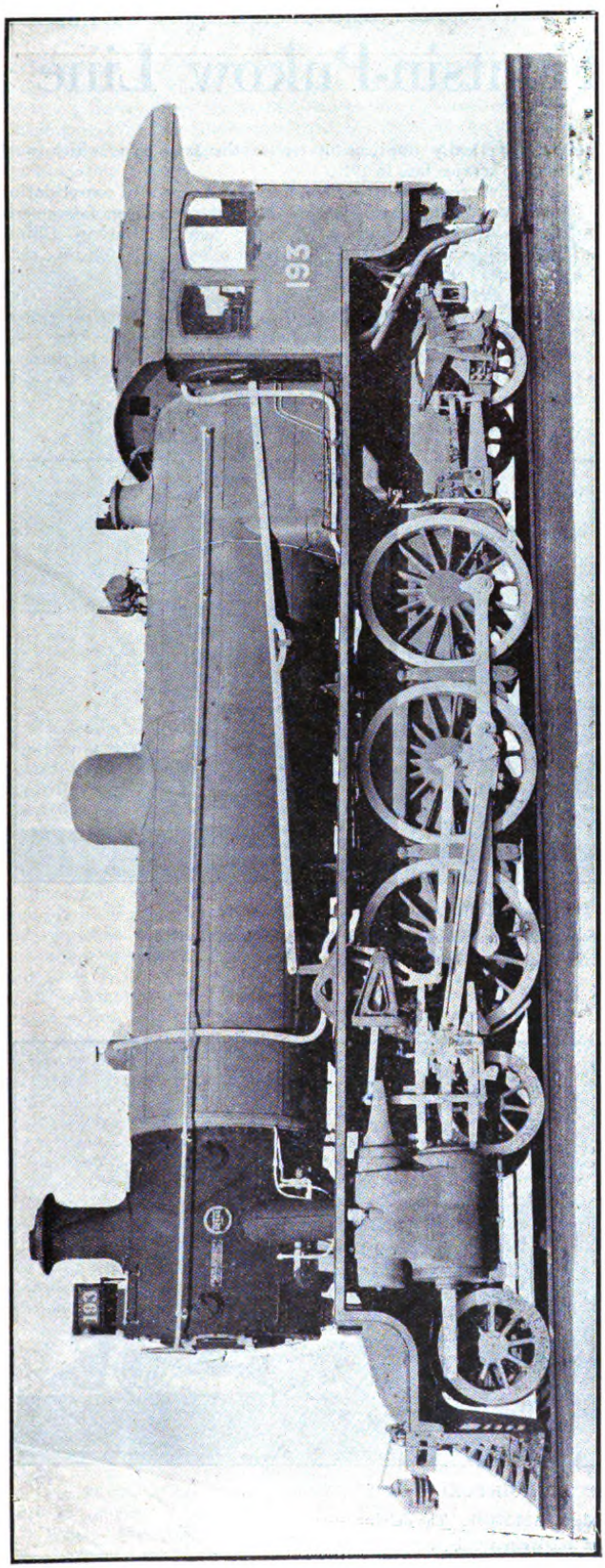


FIG. 5

Figure 4 represents one of ten Prairie type locomotives of interesting design, which were built for the Peking-Hankow Railway, one of the large Chinese trunk lines. The locomotives and rolling stock of this line are almost entirely of French design and European manufacture. The new Baldwin engines were built from designs and specifications furnished by the railway, with certain modifications, which conform to American practice, and are suited to Chinese operating conditions. They have considerable reserve capacity over that required to handle present train loads, and their flexible wheel-base will prove a great advantage in operating on this railway. These locomotives are equipped with super-heaters, and can be used in either passenger or freight service. They have bar frames and equalized wheel-loads, and with a two-wheeled radial truck at each end, they can easily traverse sharp curves. The steaming capacity is ample for heavy duty, and the boiler has a wide, deep firebox which is placed back of the driving-wheels and over the rear truck. The cylinder dimensions are 20 by 26-in., and the steam distribution is controlled by piston valves operated by Walschaerts valve gear. The driving-wheels are 59-in. in diameter. This locomotive weighs 154,600 pounds; and the tender, which is of the six-wheeled type with plate frames, weighs 92,000 pounds additional.

Figure 5 shows a large locomotive of the Pacific type for the Peking-Mukden Railway. This is one of a group of locomotives which have been specially designed to inaugurate a new passenger service, calling for the operation of heavy trains at fast schedules. The passenger locomotives heretofore used on this line, although designed with large driving-wheels for high speed service, are comparatively light and are inadequate to cope with the new train service. The Pacific type locomotives have the same size cylinders as those of the Peking-Hankow engines previously described, but the driving-wheels are 66-in. in diameter, thus giving higher speed capacity. The boiler carries a steam pressure of 200 pounds, and has a wide firebox placed over the rear truck. Interesting constructive details include plate frames, piston valves 11-in. in diameter, cast-steel piston-heads, and a light design of Walschaerts valve motion controlled by a screw reverse mechanism, which is placed on the left-hand side of the cab. The total weight of the locomotive in working order, without tender, is 171,900 pounds.

The tenders of these locomotives were built in the shops of the railway company, from material furnished by The Baldwin Locomotive Works.

These locomotives constitute an interesting addition to the motive power of the Chinese railways. They were all specially designed for the conditions to be met, and their success in service may be confidently anticipated.

American Safety Razor Opens Foreign Branches

Combining three of the largest safety razor manufacturers in the world, the American Safety Razor Corporation continues to attract favorable attention by the manner in which its business here and abroad is being developed.

Manufacturing and selling the Gem, Ever-Ready and Star dollar safety razors, the company is said to control 80 per cent. of this type of razor business throughout the world.

The high rates now charged by barbers for shaves are causing thousands of men to shave themselves. As a result safety razors, and these of the American Safety Razor organization especially, are in increasing demand.

With their products, which also include shaving brushes, soaps, powders, etc., widely known throughout this country, and a growing demand created in Europe, means were needed to distribute the products in foreign countries.

To this end the American Safety Razor Export Corporation, a subsidiary of the manufacturing company, was formed. This company handles the foreign sales and distributions for the parent company and is reporting excellent progress.

The constant growth of the company, in keeping with the official announcement of expansion plans, indicates that earnings for 1919 will be more than the estimate of $1,500,000 announced.

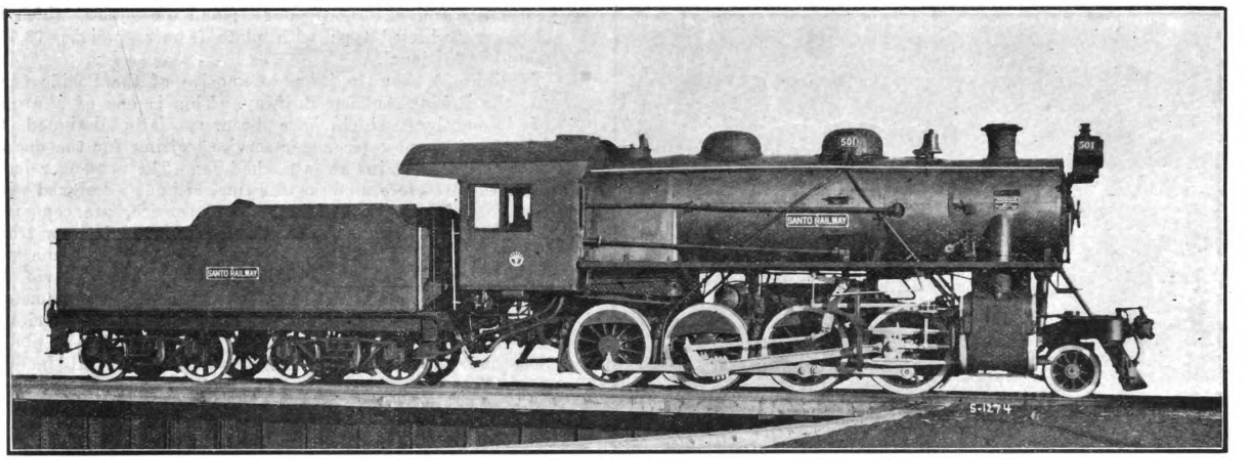
New Power for the Tientsin-Pukow Line

TRAVELLERS on the Tientsin-Pukow Railway will rejoice to hear that at last new locomotives are being purchased to develop the passenger, as well as the freight, traffic. On April 1 a contract was closed with the American Locomotive Company, of 30 Church Street, New York, for twelve Pacific type locomotives for passenger service. These are the largest and most powerful passenger engines in the Far East, and it is expected that they will be in service about October of the present year. If the authorities use these engines to their best capacity they will materially shorten the time of the journey between Peking and Shanghai.

On February 1 last a contract was closed by the same railway with the same company for twenty Mikado type freight locomotives, practically duplicating ten of the same type which were placed in service late in 1919.

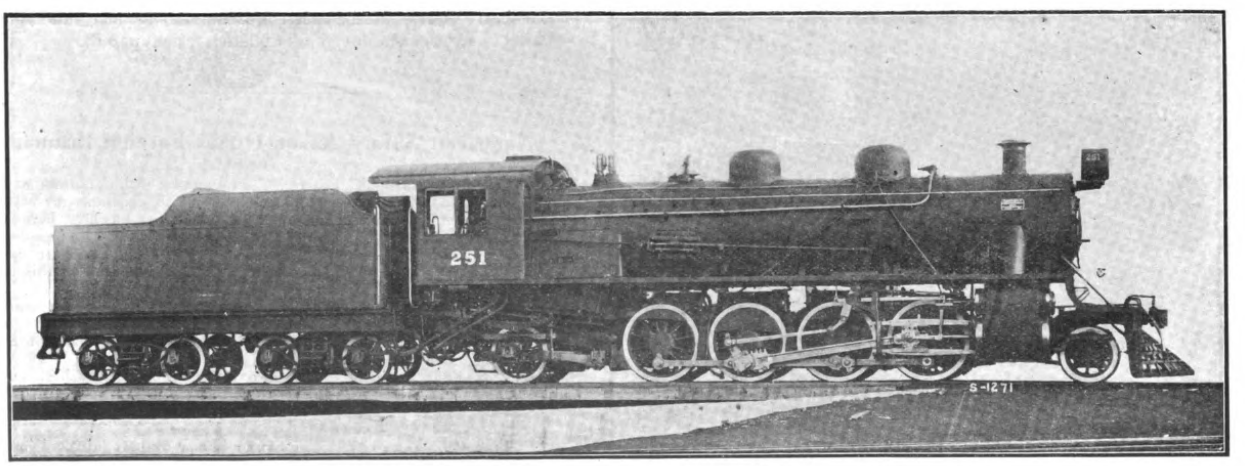
The first consignment of ten heavy and powerful consolidation locomotives for freight service, built by the American Locomotive Company for the Shantung Railway, has arrived in China. These engines are duplicates of fifteen others built for this road by the same company.

The Peking-Suiyuan Railway authorities are now having three Mallet and five Mikado type freight locomotives erected. These duplicate others of the same type built by the same company. These Mallet type engines are the most powerful locomotives in the Far East, and are used exclusively over the very heavy grades in the Nankou Pass, north of Peking.



LOCOMOTIVE BUILT FOR THE SHANTUNG RAILWAY

The weight of this locomotive in working order is 159,500-lb., with a tender of 104,700-lb. The maximum tractive power is 32,500-lb. The driving wheel diameter is 54 inches.



LOCOMOTIVE BUILT FOR THE TIENTSIN-PUKOW RAILWAY

The weight of this engine is 194,500-lb., with a tender of 124,300-lb. The driving wheel is 54 inches in diameter. The maximum tractive power is 35,300-lb.

Engineering, Financial, Industrial and Commercial News

RAILWAYS

Survey Kalgan-Kiatkta Railway.—According to a Reuter despatch a survey party has been organized and intends to begin a survey of the Kalgan-Kiatkta railway, on May 1. It has also been stated, says the "China Advertiser," that Mr. Chen Hsi-ling, Assistant Director of the Peking-Suaiyuan railway, will be appointed Engineer-in-Chief of the Kalgan-Kiatkta railway, with Mr. Hsieh Hsueh-ying as Chief of the Survey Department.

South Manchuria Company: Projected Increase of Capital.—Mention has already been made of the failure of the South Manchuria Railway Company's scheme to secure the formal transfer to itself of the management of the Korean Railway as part of the Government's fresh investment in connection with its projected increase of capital, owing to the firm opposition shown by the Government-General of Korea, says the "Japan Advertiser." The company has since been considering other means of effecting the increase of capital, which is now imperative in view of the growing necessity of the extension of its activities.

It is said that the company intends to raise Y.140,000,000 by distributing the new shares among the present shareholders and also offering part of them to the public. It is at present kept secret how the Government intends to make its new investment in the company, as the matter requires the revision of part of the present law, for which the approval of the Diet must be received. It is, however, rumored in certain quarters that the Government contemplates buying up the debentures of the company floated in England some time ago, which amount to Y.120,000,000 with a view to booking them as its investment. This is regarded as a substitute for the Korean Railway. This is only a rumor, and how the question will develop, time alone will show. It is at any rate expected that the company will succeed in getting the necessary funds for the long outstanding increase of capital. In this connection it may be noted that some changes have now been effected among important figures of the company. Whether this has anything to do with the present scheme is not known at present.

Lung-Hai Railway.—The people of Kansu and Shensi have addressed a joint telegram to the Central Government stating that they were surprised to learn that Director-General Shih of the Lung Hai Railway was sent to Europe to negotiate further loans for the construction of that line. It was originally fixed that the sum to be spent for the construction should be 250,000,000 francs; but since the 1st year of the Republic 120,000,000 francs has already been spent, while an additional loan of $5,000,000 was raised. It is estimated that the actual sum of money used in the construction is no more than £1,400,000. Under the various excuses, the Director-General has suspended the work of construction. He has all the time been negotiating for loans disregarding the protests of the people of the provinces. It is now requested that the Central Government will instruct him to proceed to his work of construction, and furnish details of accounts and an explanation for the necessity of another loan if there is any explanation available.—"Peking Daily News."

Extension of Tao-Ching Railway Granted.—It is understood that the application of the Peking Syndicate to extend the Taokow-Tsinghua Railway to Huaiking in Honan was granted by the Department of Communications.—"China Advertiser."

Chinchow-Jehol Railway.—A Chinese News Agency states that the Government has decided to construct a railway from Chinchow to Jehol in connection with the development of Hulutao Port. It is stated that Mr. Chow Chou-hsing, Director of Construction for the port, will also be director of the railway.

Ussuri Railway Grabs Cars.—Officials of the Chinese Eastern Railway reported recently that the Vladivostok railway junction was entirely congested, and that railway traffic was at a standstill owing to the impossibility of despatching coal to bring back the cars there belonging to the Chinese Eastern Railway. All appeals, so far, have been in vain, and the situation is going from bad to worse. The troops do not clear the cars, while the expeditionary armored trains prevent the cars from being otherwise removed. The Ussuri railway, which possessed only 3,000 cars, now has 6,400, and the number is daily increasing, and the congestion along the sidings and in the stations is ever growing. Besides the Ussuri railway now possesses some of the best cars of the Chinese Eastern Railway, and does not seem to be able to return these.

Korean Railway Project.—The "Seoul Press" reports that Mr. N. Sakaide, President of the South Chosen Railway Co., has lately been making a tour of South Korea on an inspection of routes for the railways projected by his company. The company is capitalised at ten million yen and is powerfully backed by the well-known Suzuki Firm of Kobe. It plans to construct three railway, one connecting Masan with Kwangju via Chinju, another connecting Kwangju with Songchyongli, a station on the Honan Railway, and yet another connecting Kwangju with Chonju. The railways will all be of broad gauge. According to Mr. Sakaide, the construction of the projected line between Kwangju, and Songchyongli, seven miles, will first be undertaken at the cost of one million yen. The purchase of land needed for the line will be begun about May and when this is finished, construction work will at once be taken up. Mr. S. Sakaide hopes to open the line to traffic in spring next year.

Japan "Four-Tracking" Line.—The Imperial Government Railway Bureau has decided to construct another double track parallel to the Tokaido line. The work will be started this year, and will be completed in seven years. The new line will be constructed in order to facilitate the transportation of freight, which is daily increasing in volume. The expenditure will not be very great, it is stated, because there is ample room on the present railway right of way to lay the new lines without necessitating any special preliminary work. When the new line is completed, it will be set apart for the conveyance of freight, and the present line will be used for passenger traffic.

Loan for the Lung-Hai Railway.—It is reported that Mr. Sze Shu-Tsen, Managing Director of the Lung-Hai Railway, who is at present in Belgium, has succeeded in negotiating a loan of Francs 25,000,000, to continue construction work. It is said that the interest is 8 per cent. per annum. As soon as Mr. Sze returns to China the construction of the sections between Hsuchow and Haichow and between Kuanyintang and Tungkuang will at once be started. After the completion of these two sections more loans will be concluded. The railway line of these sections will be made security for the loan.

Shanghai Tramways.—Following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for March, 1920, and for 3 months ended 31st March, 1920, with figures for the corresponding periods last year:—

	March, 1920.
Gross Receipts	$196,444.86
Loss by currency depreciation ...	50,800.30
Effective Receipts ... ...Mex.	$145,644.06
	March, 1919.
Gross Receipts	$164,928.56
Loss by currency depreciation ...	41,081.48
	Mex.$123,847.03
	March, 1920.
Percentage of loss by currency depreciation	27.17
Car Miles run	404,622
Passengers Carried	8,783,760
	March, 1919.
Percentage of loss by currency depreciation	26.12
Car Miles run	360,570
Passengers Carried	7,495,228
	3 Months ended 31st March, 1920.
Gross Receipts	$555,978.96
Loss by currency depreciation ...	140,647.07
Effective Receipts ... ...Mex.	$415,331.89
	3 Months ended 31st March, 1919.
Gross Receipts	$463,945.08
Loss by currency depreciation ...	112,030.64
Effective Receipts ... ...Mex.	$351,914.44
	3 months ended March, 1920.
Percentage of loss by currency depreciation	26.63
Car Miles run	1,163,825
Passengers Carried	24,782,507
	3 months ended March, 1919.
Percentage of loss by currency depreciation	25.38
Car Miles run	1,038,425
Passengers Carried	20,977,704

Russians Sieze Cars.—Further light on Trans-Siberian Railway conditions is shed by the former Japanese Consul at Irkutsk, who returned recentiy from Siberia. He says the population of Irkutsk has been increased 30 times compared with pre-war times, the number of people reaching 300,000 and at Omsk, the number of inhabitants, which was between 70 and 80,000 before, now is said to amount to 600,000. Houses being wanting, the majority of people are living in goods and passenger cars. To-day, many locomotives are found in a round house their boilers frozen stiff. Coal is very scarce. Cargo shipped from the mines is found reduced to one-tenth of the original shipment, when the consignment reaches the destination, those living in cars helping themselves to the cargo as it is transported.

Manila Railroad.—Among the first measures passed by the Fifth Philippine Legislature at the First Session on February 25 was one authorizing the Governor-General to buy, on behalf of the Government, sixty thousand six hundred and thirty-five shares of the capital stock of the Manila Railroad Company of the Philippine Islands, of the par value of twelve million one hundred and twenty-seven thousand pesos, to be paid for at the time of the execution of the subscription contract, as follows: The sum of one million pesos in cash and eleven million one hundred and twenty-seven thousand pesos applied to the present indebtedness of the Manila Railroad Company of the Philippine Islands as successor of The Manila Railroad Company. This sum goes to the general funds of the Government of the Philippine Islands for loans to the corporation last named.

To Represent China.—An order issued by the Ministry of Communications instructs Mr. Foley and Mr. Hsueh Hsi to participate in the forthcoming railway traffic conference at Tokio.

Mingshui-Changchiu Light Railway.—Mention was made some time ago that local Chinese in Shantung were discussing the construction of a light railway between Mingshui and Changchiu for the purpose of facilitating coal transportation. We now learn that the work has already been started on the line, hundreds of coolies being employed for the building of the road bed and embankment.—"China Advertiser."

Amoy-Changchow Railway.—An interesting situation has developed with regard to the proposed railway between Amoy and Changchow. Originally it was decided that the thirty million dollar industrial domestic loan should be utilised for the construction of this line, but when the proclamation of the loan was made it contained no reference to the railway. Since then it has been decided by the Ministry of Communications to inaugurate a bureau to carry out the construction of the railway, and it is probable that a loan to cover the expenditure will be floated. One great difficulty in the way of proceeding with the undertaking is the fact that a portion of Changchow is occupied by Southern troops.

Subways for Tokyo.—Tokyo is promised a subway rapid transit service within the next six or seven years, if the plans that have been framed by three promoting companies come to fruition. The Government has granted charters to the Tokyo Railway Company, the Tokyo Rapid Transit Company and the Musashi Electric Company to construct "tubes" in the city. An expert is expected to arrive in Japan shortly to advise and generally supervise the construction. This man, it is said, has had a long experience with the London "tubes." When the scheme of constructing subway lines in Tokyo was first mooted, the Government encouraged the project, but stipulated that the different companies in the new enterprise should combine and make one big undertaking of the scheme. This was not agreed to and for some time the Government withheld the necessary permission, but a few days ago granted the charters applied for.

The Tokyo Railway Company proposes the construction of three lines, 20.6 miles in length. The first of these will be from Meguro to Oshiage through Tsukiji; the second from Igebukuro to Susaki, through Takatanobaba, Iidabashi and Otemachi; while the third will be from Sugamo to Manseibashi. The total cost is estimated at Yen 92,000,000. It is hoped that work will be commenced this year and it is hoped to have all the lines running by 1927. The Tokyo Rapid Transit Company proposes constructing a subway from Shinjuku to Otsuya via Hibiya and Mansebashi. The distance is small being a little over 4 miles, but according to the present system of travelling, where one has to wait for the street car and then transfer twice or thrice, from 40 minutes to one hour is required to do the distance. The company proposes to do the distance in less than 10 minutes.

The Musashi Electric Company promises to construct a line from Meguro to Hibiya traversing the western outskirts of the capital. The route will be five miles in length and is estimated to cost about Yen 20,000,000.

The great saving of time that will result when these schemes reach fruition and the subways are in good working condition may be judged by the claim of the promoters of the subway schemes that the distance between Shinagawa and Asakusa will be done in 13 minutes in a "tube." At present to go from the Ginza to Asakusa, it takes well over an hour. "A great benefit that will result from this scheme," said one of the floaters of the new companies to the "Japan Advertiser," "is that it will greatly relieve the congested state of travelling in Tokyo and the outskirts. At the present rate of over-crowding and deterioration of the rolling stock and tram tracks, the entire transportation system of Tokyo, by street car, will be as good as tied up in three years. The street cars will continue to run even when the 'tubes' are in full working order, but they will be as different from the present cars as we hope to make the 'tubes' different from the narrow crowded boxes that now do service for the travelling public of Tokyo."

That the successful termination of the subway scheme may be the beginning of an "underground" world in Tokyo was another of the hopes entertained by the promoters. "Erection of skyscrapers will not be a successful project. The Japanese do not seem to care for that, and all said and done, it is a question whether tall buildings are ornate. I rather think that they tend to mar the beauty of a city, though they may be impressive. After we have burrowed into the ground and Tokyo is enabled to travel more comfortably and quicker, I hope to see others following in our wake too. It is not such an impossible project to put many of our smaller factories underground. That will relieve the housing situation considerably, and the ugly sights that are to be seen of little workshops dotting the city in irregular confusion everywhere, will, I hope, go 'down below.'"

It is proposed to run the 'tubes' at a uniform speed of about 16 miles per hour. The trains will be available from 5 a.m. until midnight, and the charges will be 2 sen 5 rin per mile. Although the companies that have projected the subway scheme will not combine, it is understood that when the lines are all completed, they will amalgamate into one joint company which will probably be semi-officially run, the Government subsidizing the service partially. At places where subterranean excavation is inadvisable, the track will be elevated.

Horvath Advisor to China.—General Horvath, until recently in control of the Chinese Eastern Railway at Harbin, has been appointed by the Chinese Government as advisor in connection with the affairs of the railway at a salary of $3,000 per month. General Horvath will remain in Peking.

Chinese Eastern Directorship.—Mr. Wang Ching-chuan has been appointed Associate Director to the Russian Resident Director of the Chinese Eastern Railway in succession of General Horvath, and Mr. Yu Jen-feng is to assist Mr. Wang. Many technical experts are also appointed to attend to the various duties of the departments of the line.

The "Yi Shih Pao" says that Mr. Pimenoff, the new Russian Director of the Chinese Eastern Railway has suggested to General Pao Kweiching that the Railway Administration should demand payment for the transportation of Allied and Associated troops, and that the following amounts are owing: American $250,000, Japan $1,690,000, Britain $100,800, Italy $7,000, China $144,793, and enemy countries on account of prisoners of war $360,000.

The Chinese have now organized a Chinese force for policing the Chinese Eastern Railway under the chief command of General Chang Huanhsiang at Harbin (nephew of high inspecting commissioner Chang Tso-lin of Manchuria). The Chinese railway police are armed with rifles manufactured by the government arsenals at Hanyang and Tehchow. The whole line is divided into six sections as far as the Manchuli station each of which is under the control of a sectional chief or Tuan-chang. All the Chinese experts who have been selected from among the employees of the Peking-Hankow and the Peking-Mukden railways have now been given various posts by General Pao.

ROADS

Big Street Programmes in Japan.—Tokyo proposes to spend some Yen 38,000,000 on improving the streets during the next ten years. The "Tarvia" interests of America are preparing to lay experimental sections for test purposes. Kyoto, Kobe, Osaka and other cities will follow suit and the improvements will involve the expenditure of many millions. The new highway to be built between Tokyo and Yokohama will be paved and will be from 60 to 75ft. wide. Osaka, as previously mentioned, is contemplating spending Yen 200,000,000 in improving the city, and a new highway will connect with Kobe. To handle the many paving contracts which are contemplated and already let, a new company has been organized by leading business men of Tokyo and Osaka, says the "Japan Advertiser." The company known as the Nippon Shigai Kensetu Kaisha, has a capital of Y6,000,000 and will have its headquarters in Tokyo. One of the organizations responsible for the proposed improvements, not only in Tokyo but throughout the principal cities of Japan, is the Civic Improvement Association of which Baron Goto is the head. Baron Goto has been in America and given the subject of civic improvement and betterment much study. At the meetings of the organization, lantern slides showing the ideal streets of America and other countries have been displayed, and an intense propaganda has been carried on for civic improvements in Japan.

SHIPPING

"Ukishima Maru" Missing.—The s.s. *Ukishima Maru* (1,249 tons), which was sold to a British firm by the Imperial Steamship Co. of Kobe to be delivered at London, left Moji on February 24. She went to Keelung to ship coal and then proceeded to Singapore, but since then nothing has been heard of her. It is feared that she was wrecked. As she was loaded with sugar at Moji, the loss will amount to a large sum, the ship alone being worth one million yen.

FER16A

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

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遠東時報

Vol. XVI. JUNE, 1920 No. 6

SHANGHAI, PEKING, TOKYO AND MANILA

Port and Railway Schemes for South China

Dr. Sun Yat Sen's Third Program for the International Development of China—*Continued from April Issue*

The First Program for the International Development of China as devised by Dr. Sun Yat-sen was published in the FAR EASTERN REVIEW of June, 1919, and embraced: (1) the construction of a great Northern port on the Gulf of Pechihli; (2) the building of a system of railways from the great Northern port to the North-Western extremity of China; (3) the colonization of Mongolia and Turkestan; (4) the construction of canals to connect the inland waterway systems of North and Central China with the great Northern port; and (5) the development of the iron and coal fields in Shansi and the construction of an iron and steel works. In the FAR EASTERN REVIEW of August, 1919, the Second Program was published and comprised (1) a great Eastern port; (2) the regulation of the Yangtze channels and embankments; (3) the construction of river ports; (4) the improvement of existing canals and waterways in connection with the Yangtze, and (5) the establishment of large cement works.

By Dr. Sun Yat-sen, ex-President of China.

Part III.—The Construction of the Southwestern Railway System of China

THE southwestern part of China comprises Szechuan, the largest and richest province of China Proper, Yunnan, the second largest province, Kwangsi and Kweichow which are rich in mineral resources, and a part of Hunan and Kwangtung. It has an area of 600,000 square miles, and a population of over 100,000,000. This large and populous part of China is almost untouched by railways, except a French line of narrow gauge from Laokay to Yunnanfu, covering a distance of 290 miles.

There are great possibilities for railway development in this part of the country. A network of lines should radiate fan-like from Canton as pivot to connect every important city and rich mineral field with the Great Southern Port. The construction of railways in this part of China is not only needed for the development of Canton but also is essential for the prosperity of all the southwestern provinces. With the construction of railways rich mines of various kinds could be developed and cities and towns could be built along the lines. Developed lands are still very cheap and undeveloped lands and those with mining possibilities cost almost next to nothing even though not state owned. So if all the future city sites and mining lands be taken up by the government before railway construction is started, the profit would be enormous. Thus no matter how large a sum is invested in railway construction, the payment of its interest and principal will be assured. Besides, the development of Canton as a world port is entirely dependent upon this system of railways. If there be no such network of railways traversing the length and breadth of the southwestern section of China, Canton could not be developed up to our expectations.

The southwestern section of China is very mountainous, except the Canton and Chengtu plains, which have an area of from 3,000 to 4,000 square miles each. The rest of the country is made up almost entirely of hills and valleys with more or less open space here and there. The mountains in the eastern part of this section are seldom over 3,000-ft. high but those near the Tibetan frontier generally have an altitude of 10,000-ft. or more. The engineering difficulties in building these railways are much greater than those of the northwestern plain. Many tunnels and loops will have to be constructed and so the construction expenses of the railway per mile will be greater than in other parts of China.

With Canton as the terminus of this system of railroads, I propose that the following lines be constructed:—

(*a*) The Canton-Chungking line viâ Hunan.
(*b*) The Canton-Chungking line viâ Hunan and Kweichow.
(*c*) The Canton-Chêngtu line viâ Kweilin and Luchow.
(*d*) The Canton-Chêngtu line viâ Wuchow and Suifu.
(*e*) The Canton-Yunnanfu-Tali-Tengyueh line ending at the Burma border.
(*f*) The Canton-Szemao line.
(*g*) The Canton-Yamchow line ending at Tunghing, on the Annam border.

(*a*) The Canton-Chungking line viâ Hunan. This line will start from Canton and follow the same direction as the Canton-Hankow line as far as the junction of the Linkiang with the North River. From that point the railroad turns in to the valley of Linkiang, and follow the course of the river above the city of Linchow. There it crosses the watershed between the Linkiang and the Taokiang and proceeds to Taochow, Hunan. Thence it follows the Taokiang to Yungchow, Paoking, Sinhwa and Shenchow, and up to Peiho across the boundary of Hunan into Szechuan by Yuyang. Then it follows the Wukiang Valley to Fowchow on the Yangtze. At that point the railroad should cross the Yangtze to the left bank then go up to Changshow and Kiangpei and cross the Kialing Kiang to Chungking. This railway which has a total length of about 900 miles passes through a rich mineral and agricultural country. In the Linchow district north of Kwangtung, rich coal, antimony, and wolfram deposits are found; in southwestern Hunan tin, antimony, coal, iron, copper, and silver; and at Yuyang, east of Szechwan, antimony, and quicksilver. Among agricultural products found along this line we may mention sugar, groundnuts, hemp, tung oil, tea, cotton, tobacco, silk, grains, etc. There is also an abundance of timber, bamboo and various kinds of forest products.

(*b*) The Canton-Chungking line viâ Hunan and Kweichow. This line is about 800 miles in length, but as it runs in the same track with line (*a*) from Canton to Taochow, a distance of about 250 miles, it leaves only 550 miles to be accounted for. This line, therefore, actually begins at Taochow, Hunan, and goes through the northeastern corner of Kwangsi passing by Chuanchow, and then through the southwestern corner of Hunan passing by Chengpu and Tsingchow. Thence it enters into Kweichow by Sankiang and Tsingkiang and crosses a range of hill to Chengyuan. From Chengyuan this line has to cross the watershed between Yuan Kiang and Wukiang to Tsunyi. From Tsunyi it will follow the trade route which leads to Kikiang and Chungking. This railway will also pass through rich mineral and timber districts.

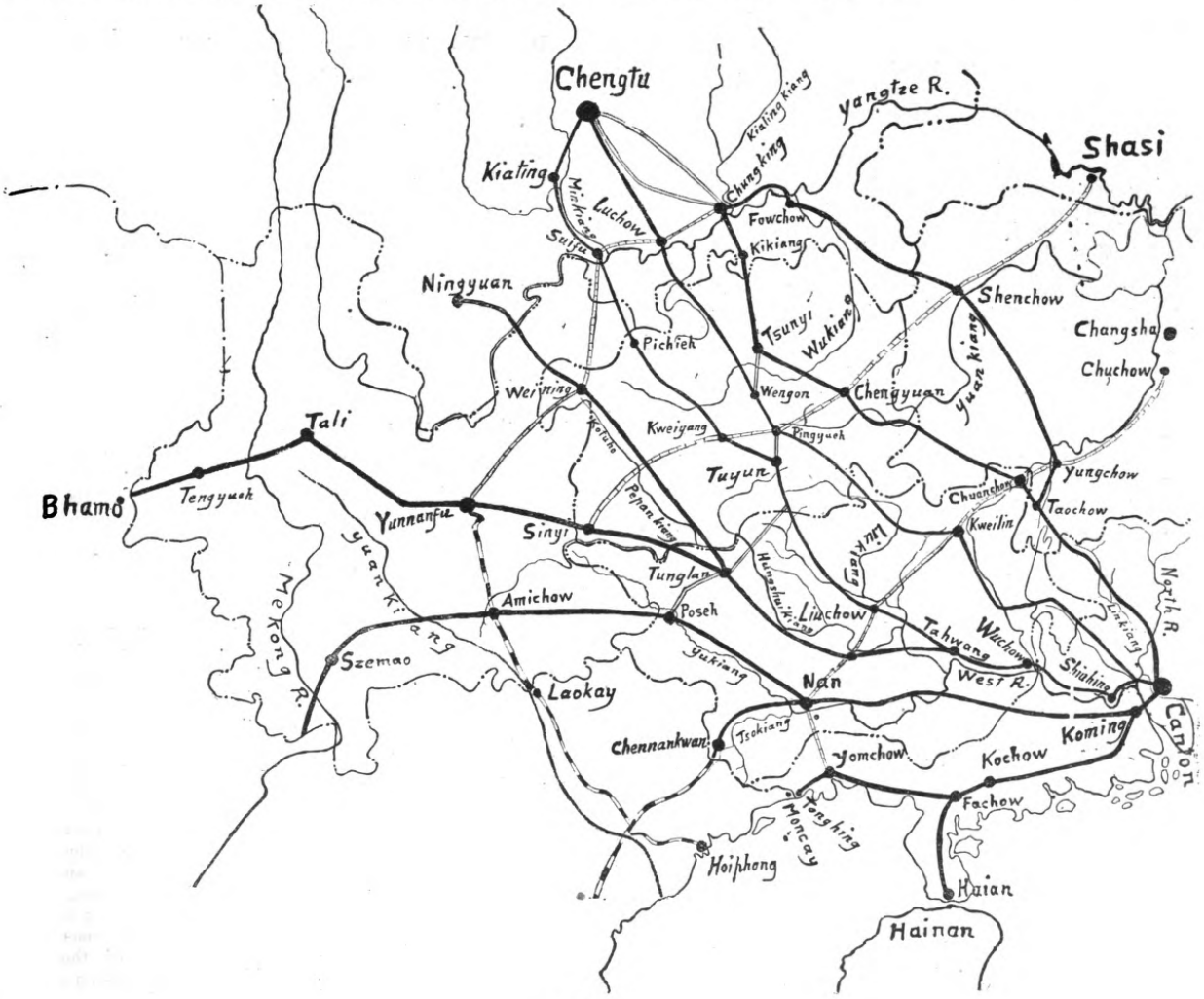
(*c*) The Canton-Chêngtu line viâ Kweilin and Luchow. This line is about 1,000 miles long. It runs from Canton directly west to Samshui, where it crosses the North River to the mouth of Suikong. Then, it ascends the valley of the same name to Szewui and Kwongning. Next, it enters into Kwangsi at Waisap, thence to Hohsien and Pinglo. From there it follows the course of the Kweikiang up to Kweilin. Thus the rich iron and coal fields that lie between these two provincial capitals, Canton and Kweilin, will be tapped. From Kweilin the road turns west to Yungning and then proceeds to follow the Liukiang valley into Kweichow province at Kuchow. From Kuchow it goes to Tukiang and Pachai and following the same valley it crosses a range of

hills into Pingyueh, thence it goes across the Yuankiang watershed into the Wukiang valley at Wengan and Yosejen. From Yosejen it follows the trade route through Luipien hills to Jenhwai, Chishui and Nachi. Then it crosses the Yangtzekiang to Luchow. From Luchow, it runs through Lungchang, Neikiang, Tzechow, Tseyang and Kienchow to Chêngtu. The last part of the line traverses very rich and populous districts of the famous Red Basin of Szechwan province. The middle portion of this line between Kweilin and Luchow lies in a very rich mineral country which possesses great possibilities for further development. This line will open up a thinly populated part for the crowded districts at both ends of the line.

(*d*) The Canton-Chêngtu line viâ Wuchow and Suifu. This line is about 1,200 miles in distance. It commences at the west end of the Samshui bridge which crosses the North River at that point for line (*c*), and following the left bank of the West River enters the Shiuhing Gorge to the Shiuhing city. It passes Takhing, Wuchow and Tahwang along the same bank. While the river here turns southwestwards the line turns northwestwards to Siangchow and then crosses Liukiang to Liuchow and Kingyuan. Then it goes to Szegenhsien and across the Kwangsi and Kweichow border to Tushan and Tuyun. From Tuyun the line turns more westerly to Kweiyang, the capital of Kweichow Province. Next, it proceeds to Kiensi and Tating and then leaving the Kweichow border at Pichieh it enters Yunnan at Chenhiung. Turning northward to Lohsintu and crossing the Szechwan border at that point, it proceeds to Suifu. From Suifu the road follows the course of the Minkiang, passes by Kiating and enters the Chêngtu plain to Chêngtu, capital of Szechwan. This line runs from one densely populated district to another and passes through a wide strip of thinly populated and undeveloped country in the middle. Along its course many rich iron and coal fields, silver, tin, antimony and other valuable metal deposits are found.

(*e*) The Canton-Yunnan-Tali-Tengyueh line. This line is about 1,300 miles in length from Canton to the Burma border at Tengyueh. The first 300 miles of the line from Canton to Tahwang will be the same as line (*d*). From the Tahwang junction this line branches off to Wusuan and following in a general way the course of the Hungshui Kiang passes through Tsien Kiang and Tunglan. Then it cuts across the southwestern corner of Kweichow province passing by Sinyihsien and thence enters Yunnan province at Loping and by way of Luliang to Yunnanfu, the capital of the province. From Yunnanfu this line runs through Tsuyung to Tali, then turns southwestwards to Yungchang and Tengyueh ending at the Burma border.

At Tunglan, near the Kweichow border in Kwangsi, a branch line of about 400 miles should be projected. This line should follow the Pepan Kiang valley, up to Kotuho, and Weining. Thence it enters Yunnan at Chaotung, and crosses the Yangtze Kiang at Hokeow, where it enters Szechwan. Crossing the Taliang mountain, it goes to Ningyuan. This branch line taps the famous copper field between Chaotung and Ningyuan, the richest of its kind in China.



MAP VI.

The main line running through the length of Kwangsi and Yunnan from east to west, will be of international importance, for at the frontier it will join the Rangoon Bhamo line of the Burmese Railway System. It will be the shortest road from India to China. It will bring the two populous countries nearer to each other than now. By the new way the journey can be made in a few days, whereas by the present sea-route it takes as many weeks.

(*f*) The Canton-Szemae line. This line to the border of Burma is about 1,100 miles long. It starts from south of Canton, passes Fatshan, Kunshan, and crosses the West River from Taipinghü to Samchowhü. Thence it proceeds to Koming, Sinhing, and Loting. After passing Loting it crosses the Kwangsi border at Pingho, and proceeds to Junghsien and then westward, crossing the Yukiang branch of the West River, to Kweihsien. It runs north of Yukiang to Nanning. At Nanning a branch line of 120 miles should be projected. Following the course of the Tsokiang it goes to Lungchow where it turns southward to Chennankwan on the Tongking border to join the French line at that point. The main line from Nanning proceeds in the same course as the upper Yukiang to Posch. Then it crosses the border into Yunnan at Poyai, and by way of Pamen, Koukan, Tungtu and Putsitang to Amichow, where it crosses the French Laokay-Yunnan line. From Amichow it proceeds to Linanfu, Shihping, and Yuankiang where it crosses the river of the same name. Thence it passes through Talang, Puerhfu and Szemao and finally ends at the border of Burma near the Mekong River. This line taps the rich tin, silver, and antimony deposits of south Yunnan and Kwangsi, while rich iron and coal fields are found right along the whole line. Gold, copper, mercury, and lead are also found in many places. As regards agricultural products, rice and groundnuts are found in great abundance, also camphor, cassia, sugar, tobacco, and various kinds of fruits.

(*g*) The Canton-Yamchow line. This line is about 400 miles long measuring from the west end of the Sikiang bridge. Starting from Canton it runs on the tracks of line (*f*) as far as the farther side of the bridge over the West River. Thence it branches off to the southwest to Hoiping and Yanping, and by way of Yeungchun to Kochow and Fachow. At Fachow, a branch line of 100 miles should be projected to Suiki, Luichow and Haian on the Hainan Straits where, by means of a ferry, it connects with Hainan Island. The mainline continues from Fachow westward to Sheshing, Limchow, Yamchow and ends on the Annam border at Tunghing, where it may connect with a French line to Haiphong. This line is entirely within the Kwangtung province. It passes through a very populous and productive country. Coal and iron are found along the whole line while gold and antimony, in some parts. Agricultural products, as sugar, silk, camphor, ramie, indigo, groundnuts, and various kinds of fruits are raised here.

The total length of this system as outlined above is about 6,700 miles. In addition there will be two connecting lines between Chêngtu and Chungking; another from east of Tsunyi on line (*b*) southward to Wengan on line (*c*); another from Pingyueh on line (*c*) to Tuyun on line (*d*); another from the border of Kweichow on line (*d*) through Nantan and Noti to Tunglan on line (*e*), thence through Szecheng to Posch on line (*f*). These connecting lines total about 600 miles. So the grand total will be about 7,300 miles.

This system will be intersected by three lines. First, the existing French line from Laokay to Yunnanfu with a projected line from Yunnanfu to Chungking crosses line (*f*) at Amichow, line (*e*) at Weining, line (*d*) at Suifu, line (*c*) at Luchow, and meets lines (*a*), (*b*) at Chunking. Second, the projected British line from Shasi to Sinyi crosses line (*a*) at Shenchow, line (*b*) at Chenyuen, line (*c*) at Pingyueh, line (*d*) at Kweiyang and a branch of line (*e*) at a point west of Yungning. Third, the projected American line from Chuchow to Yamchow crosses line (*a*) at Yunchow, line (*b*) at Chuanchow, line (*c*) at Kweilin, line (*d*) at Liuchow, line (*e*) at Tsienkiang, line (*f*) at Nanning, and meets line (*g*) at Yamchow. Thus, if this system and the three projected French, British, and American lines are completed, Southwestern China would be well provided with railway communications. See Map VI.

All these lines will run through the length and breadth of a vast mineral country, in which most of the essential and valuable metals of the world are found. There is no place in the world which possesses as here so many varieties of rare metals, such as wolfram, tin, antimony, silver, gold, and platinum and at the same time so richly provided with the common but essential metals, such as copper, lead and iron. Furthermore, almost every district in this region is abundantly provided with coal, so much so that there is a common saying: "Mu mei pu lih cheng," that is, "Nobody would build a city where there is no coal underneath." The idea was that in case of a siege those within the city might obtain fuel under the ground. In Szechwan, Petroleum and natural gas are also found in abundance.

Thus, we see that this Southwestern Railway System for the development of mineral resources in the mountainous regions of Southwestern China is just as important as the Northwestern Railway System is for the development of agricultural resources in the vast prairies of Mongolia and Turkestan. These railway systems are a necessity to the Chinese people and a very profitable undertaking to foreign capitalists. They are of about equal length, *viz.*— about 7.000 miles. The cost per mile of the Southwestern system will be at least twice that of the Northwestern System, but the remuneration from the development of mineral resources will be many times that from the development of agricultural resource.

Part IV.—The Construction of Coast Ports and Fishing Harbors

After planning the three world ports on the coast of China, it is time for me to go on and deal with the development of second and third class seaports and fishing harbors along the whole coast in order to complete a system of seaports for China. Recently, my projected plan of the Great Northern Port was so enthusiastically received by the people of Chili Province that the Provincial Assembly has approved the project and decided to carry it out at once as a provincial undertaking. For this object, a loan of $40,000,000 has been voted. This is an encouraging sign and doubtless the other projects will be taken up sooner or later by either the provinces or the Central Government, when the people begin to realize their necessity. I propose that four second class seaports and nine-third class seaports and numerous fishing harbors should be constructed.

The four second class seaports will be arranged so as to be placed in the following manner: one on the extreme north, one on the extreme south, and the other two midway between the three great world ports.

I shall deal with them according to the order of their future importance as follows:—

(*a*) Yingkow.
(*b*) Haichow.
(*c*) Foochow.
(*d*) Yamchow.

(*a*) Yingkow is situated at the head of the Liaotung Gulf and was once the only seaport of Manchuria. Since the improvement of Talien as a seaport, the trade of Yingkow has dwindled and lost half of its former business. As a seaport, Yingkow has two disadvantages, first, the shallowness of its approach from the sea and second, the blocking up by ice for several months in winter. Its only advantage over Talien is that it is situated at the mouth of the Liaoho and has inland water communication throughout the Liao valley in south Manchuria. The half of the former trade that it still holds at present against Talien is entirely due to the inland water facility. To make Yingkow outmatch Talien again in the future and become first in importance after the three great world ports, we must improve its inland water communication, as well as deepen its approach from the sea. In regard to the improvement of the approach work similar to the improvement of the Canton Approach should be adopted. Besides the construction of a deep channel, about twenty feet in depth, reclamation work should be

carried out at the same time. For, the shallow and extensive swamp at the head of the Liaotung Gulf could be turned into rice-producing land from which great profit could be derived. Regarding the inland water communication, not only the water system in the Liao valley but also the Sungari and the Amur Systems have to be improved. The most important work is the construction of a canal to connect these systems and this I shall now discuss in the next paragraph.

The Liaoho-Sungari Canal is the most important factor in the future prosperity of Yingkow. It is by this canal only that this port can be made the most important of the second class seaports in China and further the vast forest lands, the virgin soil and the rich mineral resources of North Manchuria can be connected by water communication with Yingkow. So this canal is all important for Yingkow, without which Yingkow as a seaport could at most hold her present position, a town of 60,000 to 70,000 inhabitants and an annual trade of $30,000,000 to $40,000,000 only and could never gain a place as the first of the second class seaports in China. This canal can be cut either south of Hwaiteh in a line parallel to the South Manchurian Railway between Fan Kia Tun and Sze Tung Shan, a distance of less than ten miles, or, north of Hwaiteh in a line between Tsing-shan-pao and Kaw-shan-tun, a distance of about fifteen miles. In the former case the canal is shorter but it makes the waterway as a whole longer, while in the latter case, the canal is about twice as long but it makes the waterway as a whole shorter between the two systems. In either line, there are no impassable physical obstacles. Both lines are on the plain but the elevation of the one may be higher than that of the other, which is the only factor that will determine the choice between the two. If this canal is constructed, then the rich provinces of Kirin and Heilungkiang and a portion of Outer Mongolia will be brought within direct water communication with China Proper. At present, all water traffic has to go by way of the Russian Lower Amur, then round a great detour of the Japan Sea before reaching China Proper. This canal will not only be a great necessity to Yingkow as a seaport, but will also have a great bearing on the whole Chinese nation economically and politically. With the Liaoho-Sungari Canal completed Yingkow will be the grand terminus of the inland waterway system of all Manchuria and North-eastern Mongolia; and with the approach from the sea deepened it will also be a seaport next in importance only to the three first class world ports.

(*b*) Haichow is situated on the eastern edge of the central plain of China. This plain is one of the most extensive and fertile areas on earth. As a seaport, Haichow is midway between the two great world ports along the coast line, namely the Great Northern and the Great Eastern Ports. It has been made as the terminus of the Hailan railway, the trunk line of central China from east to west. Haichow also possesses the facility of island water communication. If the Grand Canal and the other waterway systems are improved, it will be connected with the Hoangho Valley in North China, the Yangtze Valley in Central China, and the Sikiang Valley in South China. Its deep sea approach is comparatively good, being the only spot along the 250 miles of the North Kiangsu coast that could be reached by ocean steamers to within a few miles of the shore. To make Haichow a seaport for 20-ft. draft vessels, the approach has to be dredged for many miles from the mouth of the river before the four fathom line could be reached. Although possessing better advantages than Yingkow, in being ice free, Haichow, as a second class seaport, has to be content to take a second place after Yingkow, because she does not have as vast a hinterland as Yingkow, nor such a monopolistic position in regard to inland water communication.

(*c*) Foochow, the capital of Fukien Province, ranks third among our second class seaports. Foochow is already a very large city, its inhabitants being nearly a million. It is situated at the lower reach of the Min River, about 30 miles from the sea. The hinterland of this port is confined to the Min Valley with an area of about 30,000 square miles. The territory beyond this valley will be commanded by other coast or river ports, so the area commanded by this port is much smaller than that by Haichow. Consequently, it could be given only the third place in the category of second class seaports. The Foochow approach from the Outer Bar to Kinpei Entrance is very shallow. After this Entrance is passed, the river is confined on both sides by high hills and becomes narrow and deep right up to Pagoda Anchorage.

I propose that a new port should be constructed at the lower part of Nantai Island. For here land is cheap and there will be plenty of room for modern improvement. A locked basin for shipping could be constructed at the lower point of Nantai Island, just above Pagoda Anchorage. The left branch of the Min River above Foochow City should be blocked up so as to concentrate the current to flush the harbor at the south side of Nantai. The blocked-up channel on the north side of that island should be left to be reclaimed by natural process or may be used as a tidal basin to flush the channel below Pagoda Anchorage, if it is found necessary. The upper Min River must be improved as far as possible for inland water traffic. Its lower reach from Pagoda Anchorage to the sea must be trained and regulated to secure a through channel of 30-ft. or more to the open sea. Thus Foochow could also be made a calling port for ocean liners that ply between the world ports.

(*d*) Yamchow is situated at the head of Tongking Gulf in the extreme south of the China Coast. This city is about 400 miles west of Canton—the Great Southern Port. All the districts lying west of Yamchow will find their way to the sea by this port 400 miles shorter than by Canton. As sea transportation is commonly known to be twenty times cheaper than rail transportation, the shortening of a distance of 400 miles to the sea means a great deal economically to the provinces of Szechuan, Yunnan, Kweichow, and a part of Kwangsi. Although Nanning, an inland water port, lying northwest of Yamchow, is much nearer to the hinterland than Yamchow, yet it could not serve this hinterland as a seaport. So all the direct import and export trade will find Yamchow the cheapest shipping stage.

To improve Yamchow as a seaport the Lungmen River should be regulated in order to secure a deep channel to the city, and the estuary should be deepened by dredging and training to provide a good approach to the port. This port has been selected as the terminus of the Changsha-Yamchow Railway (Chu-Kin line) which will run from Hunan through Kwangsi into Kwangtung. Although the hinterland of this port is much larger than that of Foochow, yet I still rank it after that city because the area commanded by it is also commanded by Canton, the southern world port, and by Nanning, the river port, and so all internal as well as indirect import and export trade must go to the other two ports. It is only the direct foreign trade that will use Yamchow. Thus, in spite of its extensive hinterland it is very improbable that it could outmatch Foochow in the future as a second-class port.

Besides the three great world ports, and the four second-class ports, I propose to construct nine third-class ports along the China coast, from north to south, as follows:—

(*a*) Hulutao	(*d*) Ningpo	(*g*) Swatow
(*b*) Hoangho Port	(*e*) Wenchow	(*h*) Tienpak
(*c*) Chefoo	(*f*) Amoy	(*i*) Hoihou

(*a*) Hulutao is an ice-free and deep-water port, situated on the west side of the head of Liaotung Gulf, about 60 miles from Yingkow. As a winter port for Manchuria, it is in a more advantageous position than Talien for it is about 200 miles shorter by rail to the sea than the latter and is on the edge of a rich coal field. When this coal field and the surrounding mineral resources are developed, Hulutao will become the first of the third-class ports and a good outlet for Jehol and Eastern Mongolia. This port may be projected as an alternative to Yingkow, as the sole port of Manchuria and Eastern Mongolia, if a canal could be constructed to connect it with the Liaoho. It is only by inland water communication that Yingkow could be made the important port of Manchuria in the future and it will be the same in the case of Hulutao. So if inland water communication could be secured for Hulutao it will entirely displace Yingkow. If it is found to be economically cheaper in the long run to construct a Hulutao-Liaoho Canal than to construct a deep harbor at Yingkow, the Hulutao harbor will have to be placed on the northwest side of the peninsula instead

of on the southwest as at present projected. For the present site has not enough room for anchorage without building an extensive breakwater into the deep sea, which will be a very expensive work. Furthermore, there would not be room enough for city planning on the narrow peninsula, whereas on the other side, the city could be built on the mainland with unlimited space for its development.

I suggest that a sea wall be built from the northern point of Lienshanwan to the northern point of Hulutao to close up the Lienshan Bay and make it into a closed harbor, and an entrance be opened in the neck of Hulutao to the south side where deep water is found. This closed harbor will be over 10 square miles in extent but only some parts need to be dredged to the required depth at present. On the north side of the harbor, another entrance into the neighboring bay should be left open between the sea wall and the shore, and another breakwater should be built across the next bay. From there, a canal should be constructed either by cutting into the shore or by building a wall parallel with the coast line until it reaches the lowland from where a canal should be cut to connect with the Liaoho. If a canal is thus constructed for Hulutao, then it will at once take the place of Yingkow and become the first of the second-class ports.

(*b*) The Hoangho Port will be situated at the estuary of the Hoanghe on the southern side of the Gulf of Pechili, about 80 miles from our Great Northern Port. When the Hoangho regulation is completed its estuary will be approachable by ocean steamers, and a seaport will naturally spring up there. As it commands a considerable part of the northern plain in the provinces of Shantung, Chili, and Honan and possesses the facility of inland water communication, this port is bound to become an important third-class port.

(*c*) Chefoo is an old treaty port situated on the northern side of the Shantung Peninsula. Once it was the only ice-free port in the whole of North China. Since the development of Talien in the north and the development of Tsingtao in the south its trade has dwindled considerably. As a seaport, it will undoubtedly hold its own when the railroads in the Shantung Peninsula are developed, and the artificial harbor is completed.

(*d*) Ningpo is also an old treaty port, situated on a small river, the Yungkiang, in the eastern part of Chêkiang province. It has a good approach, deep water reaching right up to the estuary of the river. The harbor can be easily improved by simply training and straightening two bends along its course up to the city. Ningpo commands a very small but rich hinterland. Its people are very enterprising, and are famed for their workmanship and handicrafts second only to those of Canton. Thus Ningpo is bound to become a manufacturing city when China is industrially developed. But owing to the proximity of the Great Eastern Port, Ningpo will not likely have much import and export trade directly with foreign countries. Most of its trade will be carried on with the Great Eastern Port. So a moderate harbor for local and coast-wise traffic will be quite sufficient for Ningpo.

(*e*) Wenchow is situated near the mouth of the Wukiang in south Chekiang. This seaport has a wider hinterland than Ningpo, its surrounding districts being very productive. If railroads are developed it will undoubtedly command considerable local trade. At present the harbor is very shallow, unapproachable by even moderate-sized coastal steamers. I suggest that a new harbor at Panshiwei, north of Wenchow Island, be constructed. For this purpose, a dyke should be built between the northern bank and the head of Wenchow Island to block up the river entirely on the northern side of that island leaving only a lock entrance. The Wukiang should be led through the channel on the south side of the island for the purpose of reclaiming the vast expanse of the near-by shallows as well as for draining the upper stream. The approach from the southern side of Hutau Island to the port should be dredged. On the right side of the approach, a wall should be built in the shallow between Wenchow Island and Miau Island and in the shallows between Miau Island and Sanpam Island so as to form a continual wall to prevent the silt of Wukiang from entering into the approach. Thus a permanent deep channel will be secured for the new port of Wenchow.

(*f*) Amoy, an old treaty port, is situated on the island of Siming. It has a great, deep, and fine harbor, commanding a considerable hinterland in southern Fukien and Kiangsi, very rich in coal and iron deposits. This port carries on a busy trade with the Malay Archipelago and the Southeastern Asian Peninsula. Most of the Chinese residents in the southern islands, Annam, Burma, Siam, and the Malay States are from the neighborhood of Amoy. So the passenger traffic between Amoy and the southern colonies is very great. If railways are developed to tap the rich iron and coal fields in the hinterland, Amoy is bound to develop into a much larger seaport than it is at present. I suggest that a modern port be constructed on the west side of the harbor to act as an outlet for the rich mineral fields of southern Fukien and Kiangsi. This port should be equipped with modern plants in order to connect land and sea transportation together.

(*g*) Swatow is situated at the mouth of the Hankiang, at the extreme east of Kwangtung. In relation to emigration, Swatow is much similar to Amoy, for it also supplies a great number of colonists to southeastern Asia and the Malay Archipelago. So its passenger traffic with the south is just as busy as Amoy. As a seaport Swatow is far inferior to Amoy, on account of its shallow approach. But in regard to inland water communication, Swatow is in a better position as the Hankiang is navigable many hundred miles inland by shallow crafts. The country around Swatow is very productive agriculturally, being second only to the Canton Delta along the southern sea board. In the upper reaches of the Hankiang there are very rich iron and coal deposits. The approach to the port of Swatow can be improved easily by a little training and dredging, thus making it a fine local port.

(*h*) Tienpak is situated at a point on the coast of Kwangtung province between the estuary of the West River and the island of Hainan. Its surrounding districts are rich in agricultural products and mineral deposits. So a shipping port in this part is quite necessary. Tienpak can be made into a fine harbor by entirely walling in the bay from its west side and by opening a new entrance into the deep water in the neck of the peninsula southeast of the bay. Thus a good approach could be secured. The harbor is very wide but only a part need be dredged for large vessels and the rest of the space could be used by fishing boats and other shallow crafts.

(*i*) Hoihou is situated on the north side of Hainan Island on the strait of the same name, opposite Haian on the Luichow Peninsula. Hoihou is a treaty port, similar to Amoy and Swatow, supplying a great number of colonists to the south; Hainan is a very rich but undeveloped island. Only the land along the coast is cultivated, the central part being still covered by thick forests and inhabited by aborigines, and it is very rich in mineral deposits. When the whole island is fully developed, the port of Hoihou will be a busy harbor for export and import traffic. The harbor of Hoihou is very shallow, and so even small vessels have to anchor miles away in the roadstead outside. This is very inconvenient for passengers and cargoes, so the improvement of the Hoihou harbor is a necessity. Furthermore this harbor will be the ferry point between this island and the mainland for railway traffic when the railway systems of the mainland and the island are completed.

Fishing Harbors

As regards fishing harbors all our first-, second-, and third-class ports must also furnish facilities and accommodations for fishery. Thus all of these, i.e., three first-class ports, four second-class ports, and nine third-class ports, will be fishing harbors as well. But besides these sixteen ports there is still room and need to construct more fishing harbors along the coast of China. I propose, therefore, that five fishing harbors be constructed along the sorthern coast, that is, along the coast of Fengtien, Chili, and Shantung, as follows:—

(1) Antung, on Yalu River, on the border of Korea.

(2) Haiyangtao, on the Yalu Bay, south of Liaotung Peninsula.

(3) Chinwangtao, on the coast of Chili, between the Liaotung and Pechili gulfs, the present ice-free port of Chili province.

(4) Lungkau, on the northwestern side of Shantung Peninsula.

(5) Shitauwan, at the southeastern point of the Shantung Peninsula.

Six fishing harbors should be constructed along the eastern coast, that is, along the coasts of Kiangsu, Chekiang, and Fukien, as follows:—

(6) Shinyangkang, on the eastern coast of Kiangsu, south of the old mouth of the Hoangho.

(7) Luszekang, at the northern point of the Yangtze Estuary.

(8) Changtukang, in the midst of Chusan Archipelago.

(9) Shipu, north of Sanmen Bay, east of Chekiang.

(10) Funing, between Foochow and Wenchow, east of Fukien.

(11) Meichow Harbor, north of Meichow Island, between Foochow and Amoy.

Four fishing harbors should be constructed on the southern coast, that is, along the seaboard of Kwangtung and Hainan Island, as follows:—

(12) Sanmei, on the eastern coast of Kwangtung, between Hongkong and Swatow.

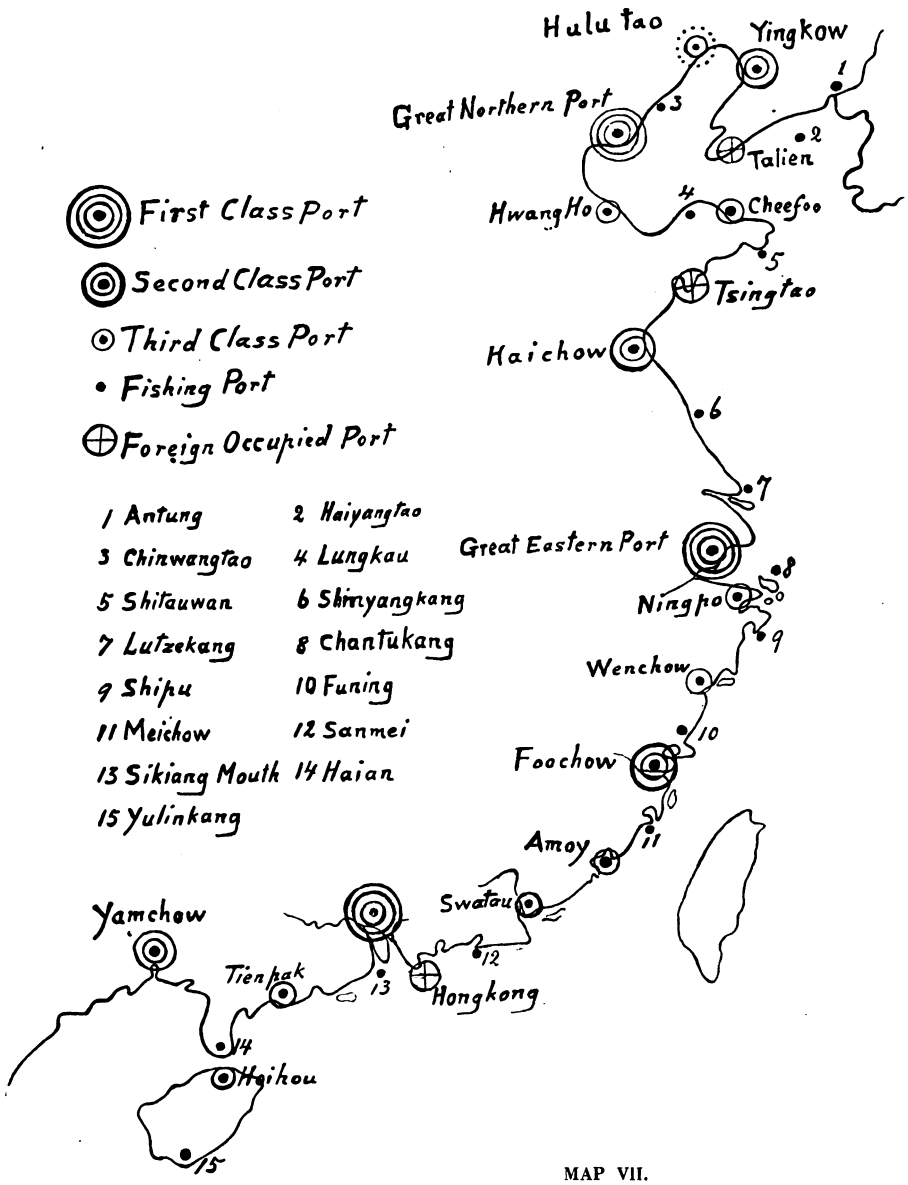
(13) Sikiang Mouth. This harbor should be on the northern side of Wangkum Island. When the Sikiang Mouth is regulated, the Wangkum Island will be connected with the mainland by a sea wall, so a good harbor site could thus be provided.

(14) Haian, situated at the end of the Luichow Peninsula opposite to Hoihou, on the other side of Hainan Strait.

(15) Yulinkiang, a fine natural harbor at the extreme south of the Hainan Island

These fifteen fishing harbors with the greater ports, numbering 31 in all, will link up the whole coast line of China from Antung, on the Korean border to Yamchow, near the Annam border, providing, on an average, a port for every 100 miles of coast line. This completes my project of seaports and fishing harbors for China.

At first sight objections might be raised that too many seaports and fishing harbors are provided for one country. But I must remind my readers that this one country, China, is as big as Europe and has a population larger than that of Europe. If we take a similar length of the coast line of western Europe we would see that there are many more ports in Europe than in China. Besides, the coast line of Europe is many times longer than that of China, and in every hundred miles of the European coast line there are more than one considerable-sized port. Take Holland, for instance. Its whole area is not larger than the hinterland of Swatow, one of our third-class seaports, yet it possesses two first-class ports, Amsterdam and Rotterdam, and numerous small fishing ports. Let us also compare our country with the United States of America in regard to seaports. America has only one-fourth the population of China yet the number of ports on her Atlantic coast alone is many times more than the number provided in my plan. Thus, this number of ports for China for the future is but a bare necessity. And I have considered only those that will pay from the beginning so as to adhere strictly to the principle of remuneration that was laid down at the outset of my first program. See map VII.



MAP VII.

Part V.—The Establishment of Shipbuilding Yards

When China is well developed according to my programs, the possession of an oversea mercantile fleet, of ships for coastal and inland water transportation, and of a large fishing fleet will be an urgent necessity. Before the outbreak of the late World War, the world's seagoing tonnage was 45,000,000 tons. If China is equally developed industrially, according to the proportion of her population, she would need at least 10,000,000 tons of oversea and coastal shipping for her transportation service. The building of this tonnage must be a part of our industrial development scheme. For cheap materials and labor can be obtained in the country, and so we could build ships for

ourselves much cheaper than any foreign country could do for us. And besides the building of a seagoing fleet, we have to build our inland water crafts and fishing fleets. Foreign shipping yards could not do this service for us on account of the impracticability of transporting such numerous small crafts across the ocean. Thus, in any case, China has to put up her own yards to build her inland water crafts and fishing fleets. So the establishment of shipbuilding yards is a necessary as well as a profitable undertaking from the beginning. The shipping yards should be established at such river and coastal ports that have the facility of supplying materials and labor. All the yards should be under one central management. Large capital should be invested in the project so as to procure a yearly output of 2,000,000 tons of various kinds of vessels.

All types of vessels should be standardized both in design and equipment. The old and wasteful types of inland water crafts and fishing boats should be replaced by modern efficient designs. The inland water crafts should be designed on the basis of certain standard drafts such as the 2-foot, 5-foot, and 10-foot classes. The fishing trawlers should be standardized into the one-day, the five-day and the ten-day service class. The coastal transports should be standardized into the 2,000-, the 4,000-, and the 6,000-ton class, and for oversea transports we should have standardized ships of 12,000-, 24,000-, and 36-000-ton classes. Thus, the many thousands of inland water crafts and fishing junks that now ply the rivers, lakes, and coasts of China may be displaced by new and cheaper crafts of a few standard types which could perform better service at less expense.

SUN YAT-SEN.

A Free Zone for Manila

"The government of the Philippine Islands will vote bonds sufficient to cover the expense necessary to the creation of this free zone and the construction of edifices, warehouses and docks proper to the same, together with other requirements for its proper administration. . . . There will be set aside P25,000 for the initial expenses of the free zone board in the preparation of plans and the compilation of data."

This paragraph is quoted from the Vamente free zone bill which was recently introduced into the lower house of the Philippine legislature, and the measure bids fair to win the approval of the lawmakers of that body.

The bill provides that the free zone at Manila be established and maintained by the secretary of commerce and communications, and that he takes action through a board consisting of the director of commerce and industry as president, and the insular of customs and the director of the bureau of public works as members.

This board will administrate the zone, the collector of customs making the rules for the handling of vessels and cargo, vessels to be free from the usual port entry and pilotage charges.

The board will recommend the site for the zone. It is believed among government circles, however, that the Tondo beach site recently recommended by Paul P. Whitham, United States Trade Commissioner, investigating trade and harbor conditions in the Far East for the federal government. Mr. Whitham estimates P80,000,000 as the final cost of the free zone development. It is also recommended that the zone be walled off and properly guarded to prevent smuggling.

That a free zone is the greatest individual requirement in making Manila the first port of the Orient is a current fact that has long been conceded by the most cynical "wat blanket business man" in the Philippines.

Manila is situated on the greatest trade route in the world, and in so far as the Orient is concerned, is the most centrally located point. Its harbor is at the southern end of Manila Bay, a great naturally sheltered body of water about thirty miles long, and is further protected by a breakwater over a mile in length. Its present water front is studded with three large piers, a fourth under construction by the government, and a fifth will soon be started by the Pacific Mail Steamship Company.

Under the provisions of the Free zone bill, goods shipped to Manila may be stored in the free zone and ultimately transhipped to any other country without paying any of the port charges and taxes levied on a cargo imported for Philippine consumption. This would mean a leap in total tonnage and would also solve the freight problem, as many of the ships transhipping cargo at Manila could load Philippine exports which otherwise would lay on the dock waiting the straight schedule ships.

Chinese Stamp Tax in Foreign Concessions

The Diplomatic Body at Peking has agreed with the Government of China that the Chinese Stamp Tax shall be enforced on Chinese residents within the limits of the Foreign Concessions in China and a joint proclamation in the names of the Bureau of Foreign Affairs for Chihli and the Sub-Department of Stamp Duty for Chihli has been issued setting forth the origin and steps taken to enforce this law within the Foreign Concessions and giving a schedule of the duties to be collected.

The Chinese Authorities issuing this joint proclamation requested that it should be posted in the various Foreign Concessions that the Chinese subjects resident within the Concessions should be instructed lawfully to obey the regulations as set forth.

The Diplomatic Body in Peking agreed to the collection of the stamp tax in the foreign concessions only with the provise that it is a tentative step, accepted with the clear understanding that the rights of the foreign administrations and of foreign nationals in the settlements shall not suffer any inconvenience nor appear to be infringed thereby. In this latter case the measure is to be modified or if necessary cancelled.

The tax which is collectable upon practically all written instruments used in connection with business transactions, involving amounts of $1.00 or over is 1 cent, and in some cases where the amount is over $10 the tax is 2 cents. On bills of lading, insurance policies, bills of exchange, promissory notes, wills and partnership agreements the schedules run from 1 cent to $1.50.

Foreign police officers in the concessions are empowered to enforce the payment of the tax. Persons who fail to pay the tax are subject to fines, to be collected by the consulate of the concession in question. The stamps are to be on sale in all Chinese Post Offices. The regulations go into effect on May 1. No funds are made available for the enforcement of the tax provisions by the foreign officials, except that they are to retain half on the fines collected from delinquents.—"North China Star."

Japanese Ownership of Railroads

Government ownership of railroads in Japan has been a success, because it has found favor with the great majority of the people from its inception, according to Mr. Yosuki Tsurumi, secretary of the imperial government railroads.

"The divided attitude of the American public on the question of government ownership, however," said Mr. Yosuki, "probably would make the permanent taking over of the lines in this country precarious.

"The success of government ownership of railroads depends entirely on the support given the movement by the general public and the hundreds of thousands of employes of the railroads. In Japan, almost all the lines were nationalized 14 years ago, and the returns since have averaged six to seven per cent. on the invested capital.

"The entire profits are used for the improvement and extension of the roads. We have managed to do this because we have had the confidence and support of the public and the employes, all of whom felt that better transportation was and is possible through government control.

"As we have no dividends to pay, we have been able to pay better wages to our employes, as much of the money formerly turned back to stockholders is now available to pay workers more in their weekly and monthly envelopes.

"The employes also further favor government ownership because it offers them greater security in their positions. In a country like Japan opportunities for working people are fewer than they are in the United States, and it is more essential that the workers obtain permanent positions."—From *Christian Science Monitor.*

Engineering, Financial, Industrial and Commercial News

RAILWAYS

Revenue of Japanese Railways in April.—The Japanese Government Railway reports that during April, on all the State lines, 5,314,658 tons of cargo were carried, the revenue of the freight service having come up to Y.11,682,170. The daily average of cargo carried was 177,155 tons. Compared with the corresponding date of last year, the daily average shows an increase of 5,400 tons. The revenue shows an increase also of Y.389,406 per diem.

New Line Projected from Sunning City to Hoi An City.—Mr. Mak, a wealthy Cantonese merchant from the Straits Settlements, proposes to float a company for the construction of a branch railroad from Sunning City to Hoi An City.

Japanese Railways Improvement.—The Japanese railway board has decided to start the work of doubling the present two track road on the Tokyo-Kobe line at the coming fiscal year to be finished in seven years.

The Japanese Government announces that the Arima Light Railway has been nationalized and transferred to the control of the Government Railways. The purchase price was Y.384,772.35, for which the Government has delivered to the company operating the line public bonds the face value of which is Y.434,800.

Proposal to Have Russian Financiers Superseded by Japanese in Ping Hei Railway Loan.—On account of the Chinese Government's reported proposal to have new arrangements in the Ping Hei Railway Loan, which was formerly concluded between the former Russian Imperial Government and China, with a view of introducing Japanese financial aid, certain members of the Senate made a vehement protest against the step to be taken

Dr. C. C. Wang Takes Over Management of Chinese Eastern Railway.—Dr. C. C. Wang, former director of the Peking-Hankow line, formally assumed his duty as Chinese resident manager of the Chinese Eastern Railway. His duty is to co-operate with M. Pimenoff, the Russian manager, in matters concerning the administration of this Sino-Russian line in North Manchuria. General Pao Kuei-ching left Kirinfu on April 22 for Mukden for consulting with General Chang Tso-lin about military preparations along the Chinese Eastern Railway for the protection of Chinese and foreign residents within its zone and the establishment of a Manchurian Bank for Fengtien, Kirin and Heilungkiang jointly. The capital will be subscribed by the three provinces.

Chinese Financiers Urge Redemption of Railways Under Foreign Control.—Liang Shih-yi and the Chinese financiers connected with his Five Families Bank, the strongest native banking group in North China and a candidate for admission into the New Consortium, if that group is ever formed, are urging upon the Government the redemption of those national railway lines still under partial foreign control. Liang and his friends guarantee that the funds necessary for this purpose can be obtained from his group and from other prominent Chinese bankers.

It is Liang's plan to begin with the redemption of the Peking-Mukden Line, on which only $1,500,000 is due to the British interests which financed its construction. Other lines financed by foreigners and now under partial foreign control will be redeemed later.

Officials at the Ministry of Communications, while in sympathy with the scheme, express doubts as to whether it can be realized. Aside from the financial obstacles in the way of putting it through it is believed that the foreign interests concerned will not agree to it. Their contracts have in most cases, a number of years to run, and there is little likelihood that they will consent to forego the privileges accruing them from these contracts.

COMPLETE JAPANESE-AMERICAN ACCORD

Carried Back to the United States by Thomas W. Lamont—Financial Consortium Attains Practical Shape After a Year of Discussion and Delay.

A complete and satisfactory agreement has been reached as to the political and other features of the Chinese Financial Consortium which have been subjects of discussion between the bankers and governments of Japan and America since the new Consortium was organized at Paris in May, 1919. Japan's special rights are fully recognized and at the same time care has been taken to conserve the rights of China within her own national domain. To assist in perfecting the understanding and to secure the necessary international team-work, Ambassador Morris has accompanied Mr. Thomas W. Lamont, head of the American group, on his return to the United States.

All concessions and options in China possessed by each banking group are pooled, except those upon which substantial progress has been made. Borrowing is limited to the Chinese central government, provincial governments, and to corporations guaranteed by the central or provincial governments. Loans for individuals or private enterprise do not come under the purview of the Consortium. Equality of opportunity is guaranteed, irrespective of the amount of money raised from time to time in any particular country.

Federated Malay States Railway Expansion.—The appropriations for extending the service of the Federated Malay States Railway, which involved about $54,000,000 in 1919, are apt to be considerably increased this year. Contractors are already working on new wharves and harbor improvements at Prai, the terminus of the railway system at the settlement of Penang, where the doubling of the line and other alterations will mean an approximate expenditure of $1,700,000 in 1920. Another work that has been recently sanctioned is the construction of a causeway across the Straits of Johore, at a cost of $1,500,000. A further sum of about $1,135,000 will be spent to double the line and erect a new station, godowns, etc., in Singapore. The work on the line from Pasir Mas to the Siamese border, which it is expected will be completed next year, will involve the expenditure of over $2,500,000 in 1920. Through train service to Siam was inaugurated in July, 1918, which has evidenced that a considerable trade will be forthcoming when the shortage of rolling stock is relieved, and add materially to the importance of Penang as a terminal port for international commerce. In 1918 the gross receipts of the railway were about $7,000,000, and the net profits $1,800,000.

New Electric Railway.—At Odaru, Hokkaido, a new electric railway is being laid by the Hokkai Chuo Electric Railway Company, projected by Mr. Kei Isono and other local businessmen. According to the charter granted by the Government Railways recently to the company, the projected line is 27.40 miles in length, connecting Temiya, Odaru, with Nashima Park at the outskirts of the town. The gauge of the line is 3.6 feet. The company plans to build the line at the expense of Y.7,000,000.

Chinese Protest Against Proposed Mine Railway.—The provincial assembly of Shanhsi has sent in a despatch to the civil governor concerning the alleged granting to the British firm, Peking Syndicate in Peking, the right of building a railway from Chinghua in Honan to Tsechow in Shanhsi for the development and transportation of iron and coal minerals. The memorialist say that through the Peking-Hankow and other railway, the vast mineral deposits of this province can be exported to other provinces and also to foreign countries and that if so, the mining and transportation interests will be entirely in the hands of foreigners.

Further, in accordance with the stipulations of the purchase agreement signed between the province of Shanhsi and the Peking Syndicate about ten years ago when the British interests consented to restore their railway and mining concessions to the people of Shanhsi, all railways in connection with mines must be built by the natives with pure Chinese capital. The central government are requested to take note of the above-mentioned purchase agreement.

SHIPPING

New Australia-Japan Service.—It is understood to be the intention of a Japanese firm to commence a shipping service between Australia, China, and Japan. Negotiations are proceeding for the establishment of the line, which, if successful, will lead to a direct service between Melbourne, Sydney, and Queensland ports and the East.

It is expected that important developments will occur in the Eastern trade. The purchase of the E. and A line by the Lord Inchcape combine has led to a revival of this company. Already the new interests have decided to obtain additional tonnage. Negotiations are now proceeding for the employment of other vessels.

political parties, rather than personal domination and both experience and inclination would help me to maintain a relationship between congress and the administration forces which is the highest assurance of constitutional government by law."

Good, sound American political doctrine!

Harding means Service and Sanity. Calvin Coolidge means Law and Order. Harding for Harmony, Coolidge for Courage. Ohio and Massachussetts leading the Republican landslide, it is a dull, "dry" and dreary outlook for some "deserving Domocrats." Well, they have one satisfaction, at least. They managed to run away with eight years of office, surprising everybody (including, most of all, themselves).

Eight years ago, we "covered" the big Battle of Baltimore, when Bryan outpointed the Clark cohorts and talked the last ounce of patience out of the Democrats. The Commoner "put Wilson over," to quote his own words. Returning from the Maryland metropolis, he had this to say in the Pullman car:

"Well, we've nominated him. He'll be elected, and when he leaves the White House there'll be nothing left of the Democratic party but splits and splinters."

Wilson vetoed Lenroot and Republicanism in 1918. The voice was the voice of Woodrow, but the hand was the hand of Joe Tumulty. Wisconsin and the nation at large repudiated the Autocrat. Wilson vetoed Hardwick and said in effect to the Georgians that, politically speaking, they were schoolboys and must do as the master told them. Georgia, according to the press dispatches, returns to the dignity of statehood by listening to reason and "Jim" Reid. The brunt of the battle, all through the South and the country, has been borne by the intrepid little Missouri statesman, one of the few brilliant men in the Senate and a glutton for work. Reid has the sharp tongue of the late Joseph Chamberlain and the legal lore of Fuller. His middle name is Industry. Once, for more than a week, during the fight against ratification, he hadn't time to remove his shoes.

"Your sox must have been fierce," I chaffed him.

"Yes," he came back; "they were as full of holes as the League of Nations."

* * *

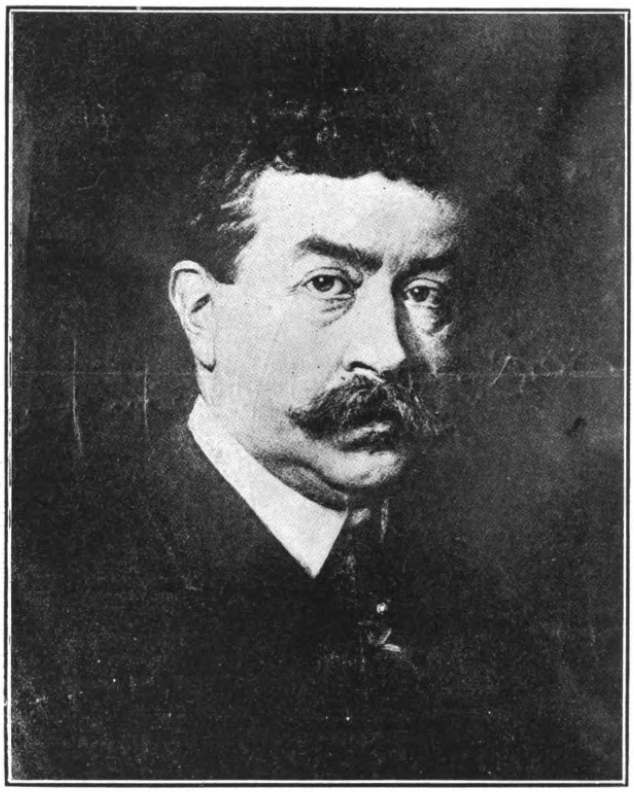
OLDTIMERS among the "foreign devils" in Asia regard with real affection Engineer-General Demetrius Horvath, recently announced as a foreign adviser of the Chinese government. It is assumed that it is the intention of the people in Peking to retain General Horvath in the management of the Chinese Eastern Railway. Born in 1859, and reared in orthodox surroundings, General Horvath took the course at the Engineering School of Petrograd and graduated as an officer in 1878. In 1902 he was chosen to manage the Chinese Eastern Railway and, from the first, his administration was surprisingly successful. He had many difficulties to overcome. He surmounted them and, by his rugged honesty and savoir, left a minimum of "scars." During the Russo-Japanese war, he was able to render his government service that was highly appreciated by the old régime. In 1911, he was promoted to the rank of general.

General Horvath

The Chinese like General Horvath, because he understands them and is eager to aid them. He has had much experience along lines that make him particularly valuable as a member of the Chinese public service. He is what is known North and South of Mason and Dixon's line as a good "mixer." That helps

* * *

A WELCOME visitor to China is Monsieur Paul Painlevé, who preceded the famous "Tiger" as prime minister of the French Republic. In many ways, his presence in Peking is interesting and important.



M. Paul Painleve

China has a lot to learn from France, the cradle of modern western civilization. The Chinese might well model their patriotism after the heroic mold of the heroes of the Marne and Verdun. Glorious France! No man with red blood in his veins could walk the battlefields of the French front or step over the desert of débris that will ever be known as "the devastated area" without wanting to shout for France and to salute every French man, woman or child. France was 100 per cent. brave—a nation of heroes; and China could do with a hero or two.

Paul Painlevé is interesting on his own account. We had the pleasure of meeting him at Paris and we found him a very remarkable person, indeed—an enthusiast who is as practical as he is eager and bubbling over with all sorts of surprising knowledge. He was an infant prodigy and a power among his fellows while all around him hung the dun brown atmosphere of sordid striving for livelihood. Painlevé came up from the people; his father was a Paris laborer and he became a savant in his teens. He was not given an education—he went out and got it, because it was in him; and thus he became president of the council in 1917 and president of the Academy in 1918. He is among the most famous of the world's mathematicians. Also, he is a great humanitarian.

M. Painlevé was president of the Société d'education Rationelle and he is in Peking as the envoy of the Chinese Institute recently founded at the Sorbonne, which is beginning with a

Engineering, Financial, Industrial and Commercial News

RAILWAYS

Japanese Government Railways.—In the course of the reorganization of the Japanese government railways, the title of Imperial Government Railways has been changed to the Department of Railways and the former Traffic Department is now the Traffic Bureau. All traffic affairs of the lines are directed under the supervision of Mr. H. Motoda, minister of the Department of Railways; Mr. S. Ishimaru, vice-Minister; and Mr. S. Nakagawa, director of the Traffic Bureau.

Receipts of Japanese Government Railways.—The total volume of freight carried by the Japanese government railways during April amounted to 5,073,695 tons and the number of passengers carried was 48,971,280. The receipts from freight and passengers totalled Y.11,797,084 and Y.23,580,534 respectively. Compared with the corresponding month of last year the receipts from freight and passengers represent an increase of Y.1,116,645 and of Y.8,210,595 respectively. The revenue per mile was Y.189.42, an increase of Y.47.50 as against the same month last year.

South Manchurian Railway Co.'s Good Report.—Last year was a most successful one for the South Manchuria Railway Company. From 1915 to 1919 the working capital has been steadily increased, the profits shown being as follow :

Year.	Profit
1915	...Y. 8,080,498
1916	... 10,107,607
1917	... 14,925,642
1918	... 22,193,171
1919	... 24,300,000

One of the causes of this increased profit was the increase in business immediately after the war. The results for 1919 are very satisfactory when it is remembered that salaries have been higher and that loss was caused by the soaring price of silver, the price of coal, and the non-working of the Chosen section of the railway.

The increase in salaries amounted to more than Y.20,000,000 per annum, and to meet this extra expense the Company decided to raise the rates, both for passengers and freight, one month after the increase in salaries. The rise in silver caused losses, both directly and indirectly to the extent of from Y.600,000 to Y.700,000. The losses on the sale of coal are estimated at several million yen. Japanese and Kailan coal were bought by the Company, and sold in Manchuria at a lower price, at a loss of Y.10 per ton. The loss from the Chosen section is estimated to be Y.800,000, whereas another Y.800,000 were spent in preventing the spread of disease.

Japan's Railways Active.—The business report of the Japanese Government Railways for May makes a better showing than that of the same month of the previous year. The freight and passenger service report shows a big gain in transportation. The total revenue for the month ended is Y.35,277,618 an increase of Y.9,327,240 for the same period last year. The figures of the passenger service department are given as Y.23,580,534, and the freight receipts totalling Y.11,697,064, as compared with the returns for the same period of the previous year, these figures show an increase of Y.8,210,595 and Y.1,116,645 respectively. During the period, the state lines carried 11,342,888 more passengers and 140,163 tons of food stuff than in the same period of 1919.

Japanese Railway Program.—The Japanese government plans to build 6,400 miles of railroad in the next decade. Out of 8,200 miles of railroad in Japan, the government owns 6,200 miles. Proportioned to each 10,000 inhabitants Japan has 1¼ miles of road against 24.7 in the United States, 8 in France, 5.9 in Germany, 5.2 in Austria and England and 3.2 in Italy.

East Persian Railways.—In the course of an interview with His Excellency Shaukat-ul-Mulk, governor of Seistan a representative of the *Daily Gazette* (Karachi) learned that the Quetta-Nushki railway has now been carried forward to Duzadab on the Persian frontier, about 30 miles south of the southwestern point of the Afghan frontier and about 120 miles south and slightly west of Nasratabad (or Seistan), the capital town of the governor's Province. His Excellency is also governor of the Province of Kainat, north of Seistan, and is thus in charge of the greater portion of the Afghan-Persian frontier. He is very optimistic as to the future of Persia and the effect of the Anglo-Persian agreement if the Persians themselves seize their opportunities. He is also convinced of the great possibilities of the extension of trade between India and East Persia as soon as the Nushki railway, which is at present used for purely military purposes, is made available for mercantile traffic. From the present terminus of the line there is a good motor road through Neh and Birjand to Meshed in the extreme north, and another road to Kerman, which is about 210 miles west-northwest of Duzdab. Asked as to the possibilities of railway development in East Persia, the governor pointed out the advantages of a line form Duzdab northward near the frontier, which would tap the fertile districts around Herat, the granary of Central Asia. Many schemes are being discussed and internal railway development is likely to receive early attention from the ministers.

Persian Railway to the Caspian Sea.—Official inquiry having been made by the American Embassy in London, as to whether any arrangements have been concluded, or are under consideration, with the Persian government regarding the construction of a railway across Persia from Mesopotamia to the Caspian Sea, the following reply has been returned on behalf of the British Foreign Office :

On January 10, the Persian Government granted to the Persian Railway Syndicate (Ltd.) an option for the construction and equipment of a railway from Khanikin to Teheran via Kermanshah and Hamadan, with a branch to Enzeli on the Caspian Sea. The Persian Government has reserved the right to decide later whether the railway is to be constructed as a Persian State line or whether a concession shall be granted to the syndicate to build the line with a Persian Government guaranty on such terms as may be necessary and practicable. If the railway is built as a Persian State line, the capital necessary for the undertaking would be raised by the issue of Persian Government bonds secured by the necessary guaranties.

Proposed North-South Railway, Australia.—The construction of another transcontinental railway to link Darwin with the southern States is being seriously discussed, chiefly by interested people in South Australia. The distance between Oodnadatta and the Katherine River is 1,026 miles, and this is the route most strongly urged.

Lung-hai Railway Loan Protest.—The natives of Kansu and Shensi—residing in the Capital—recently held a meeting to discuss means for the immediate construction of the Lung-Chin-Yu-Hai Railway. They have addressed the following petition to the Peking government and the provincial authorities of Kansu and Shensi :—

"Hitherto it has been the policy of the financial administration of the Government to contract foreign loans for various purposes under the pretext of railway construction. For the construction of the Lung-hai Railway a sum of 120,000,000 francs and another sum of $5,000,000 were borrowed from Belgian Syndicates; but in fact only a sum of £1,500,000 was expended for the construction work, while the rest was transferred to other accounts. It is reported that the present loan concluded from Belgium is a very big one, which if applied to the construction of the line will do great good to the nation. It is therefore requested that the central and provincial authorities will devise means to check the use of the proceeds of the loan. Kansu and Shensi are the most important provinces in the Northwest, where for centuries the Capital of the nation was fixed to exercise a powerful control all over the country. These provinces are rich with vast natural resources and products, but for the lack of facility of communications, the industry and commerce have not yet been well developed. During the past few years the people there suffered seriously from local bandits, and it is believed that after the construction of this line the military forces of these two provinces will be able to suppress them without much difficulty. It is unnecessary to dwell on the past blunders and errors committed by the government, but the people of the two provinces expect that this time the government will deal honestly with them by utilizing the proceeds of the present loan for construction purposes only. A mandate should be promulgated ordering that no matter how difficult the financial situation of the country may be the proceeds will not be applied to any other purposes, etc."

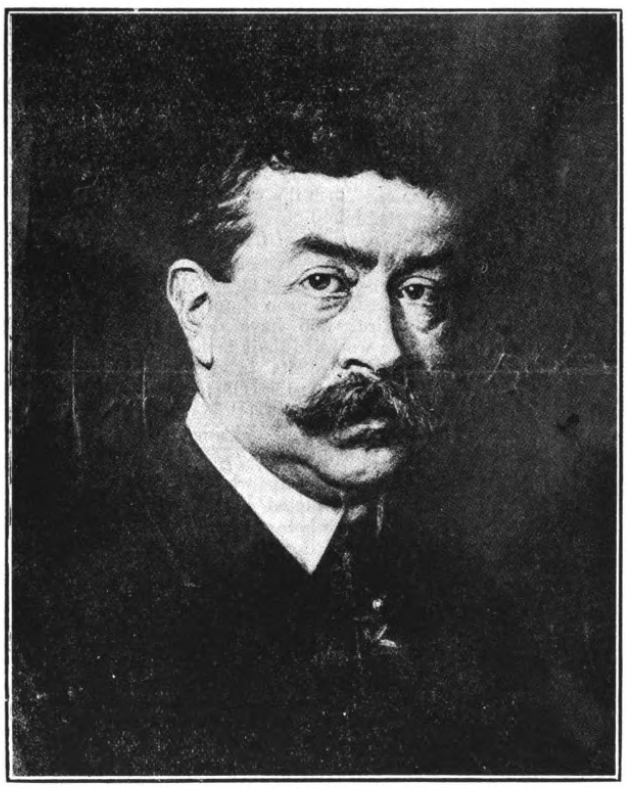
SHIPPING

Oil Ship On Fire.—Some oil, which is supposed to have leaked from the str. *Juno*, took fire while the ship was in drydock at the Kiangnan Dock and Engineering Works, Shanghai, and for a time the vessel was in peril. The flames from the oil enveloped the port side of the *Juno*, and some cabins and a lifeboat took fire. Two of the shores holding the vessel in position were burnt and gave way, but the remainder held. This was fortunate as the ship is understood to have had munitions in her hold.

New French Ships.—Six steamers, each of 16,000 tons, and two of 4,000 tons are being built for the Franco-Indo-China route, according to the French Ministry of Marine.

Paul Painleve Planning Unification of Chinese Railways

AN official statement issued at Peking announces that M. Paul Painlevé, former French premier who is now in the Chinese capital as the guest of President Hsu, is directing the preparation of plans for the unification of Chinese national railways. The admission was not unexpected in informed circles. It is also reported, but not confirmed, that M. Painlevé is



M. Paul Painleve

presenting plans for the development of aircraft operation in China. The statement authorized by the ministry of communications and the distinguished French visitor is as follows:—

"Under special instructions from His Excellency Hsu Shih-chang, President of the Chinese Republic, Mr. Yeh Kung-cho, high commissioner for industry, who was specially despatched to Europe and America last year by the Chinese government to make investigations, in the name of the Chiao-tung Pu, signed an agreement with M. Paul Painlevé, ex-prime minister of France, appointing Mr. Painlevé technical adviser in connection with the proposed re-organization and unification of the Chinese railways, and not as an ordinary adviser to the Peking government.

"M. Painlevé is now represented by M. Taton and M. Nadel in the conferences of the technical board of the ministry of communications. On account of this, the salary and allowance of the technical adviser are being used for the maintenance of his staff of the scientific and technical mission to China this time, and M. Painlevé will not draw one single dollar for himself. In addition M. Painlevé and his members will make careful investigations into Chinese fine arts, educational and economical matters during their sojourn in this ancient country for securing useful materials for writing books after their return to Europe.

"In addition to the confering of an honorary degree of Doctor of the Paris University on His Excellency Hsu, M. Painlevé has brought four letters of introduction from four French Presidents, including M. Deschanel, to the chief executive of China, which will be presented to His Excellency Hsu after they have been duly translated into the Chinese language. Further, when passing through Washington, *en route* to the Far East in May last, M. Painlevé was asked by Mr. Colby, Secretary of State of the United States, and General Pershing, former commander-in-chief of the American troops in France, to convey two autograph letters for President Hsu.

"The special mission of M. Painlevé is to study technical affairs concerning the proposed nationalization of the Chinese railways in conjunction with Allied members of the technical board, and there will be no collision of interests with British, American and other Allied friends in China, because he wishes only co-operation and mutual assistance. As M. Painlevé is deeply interested in the development of Western and Chinese civilization, he has been offered and accepted the post of chancellor of the Chinese Institute for Higher Studies in the Paris University, with M. Deschanel and Mr. Hsu Shih-chang as honorary presidents. The French scientific and technical mission, under M. Painlevé, will remain in Peking about one month, and then visit some of the important provincial capitals previous to its return to Europe in September next. The members of the mission are:—M. Borel, M. Nadal, M. Martin and M. Bonnard. The last represents the French Foreign Office."

In several statements, before and since his arrival in China, M. Painlevé has outlined the part he is endeavoring to play in the strengthening of Franco-Chinese interests and relations. During the war, France concentrated all attention upon defeating Germany. China had to be neglected. His mission, he explained, was to counteract this state of affairs and make the

Yeh Kung-cho, Appointed Vice-Minister of Communications

influence of France in the new Republic of China stronger than ever before, by means of a definite program mapped out for him by the French government, the first steps in which are to be carried out by him during his forthcoming visit to China.

The salient features of this program are to attract the youth of China to Paris by teaching them to consider it the centre of western civilization and to create in China centres whence French culture may be disseminated, thus making possible the realization of the plans of a Franco-Chinese intellectual entente which have been worked out in Paris.

"Already there exists in Paris," said M. Painlevé, "an institute for advanced Chinese study, but it will be necessary for us to develop it in such a way that the youth of China shall come to it for study in increasing numbers. We purpose to make the curriculum at this institute so interesting that powerful attraction which it will exercise on the minds of our young Asiatic friends will be simply irresistible. This course of study, which will comprise all the technical courses of our advanced commercial schools, will include, in addition, the study of English, since this language seems to be considered a necessary finishing touch to the equipment of every Chinese intellectual.

"Moreover, we intend to do something that has never occurred before to those at the head of any foreign institution of learning: to teach, likewise, the history of Chinese culture in order to keep the students in touch with their own civilization. Unlike other nations, we do not wish our Chinese students to lose the sentiment of their own nationality and become forever Frenchified; we wish that they may remain Chinese, yet arrive, notwithstanding this, at a real realization of the superiority which they gain for themselves by making themselves part of two civilizations, the oriental and the occidental.

"This task will be made easy for us French because there has existed for a long time a very strong feeling of sympathy between Chinese and French intellectuals. In the eighteenth century we find clear signs of this sympathy in the works of Voltaire and Diderot and since that time it has often been noted how profoundly the intellectuals of China have been influenced by our philosophers.

"So much for Paris.

"In China, our task will be far more arduous, because practically everything there tending to the attainment of the end which we have set ourselves must either be created out of the whole cloth or re-created. Our first task will be to establish, at the universities of Peking, Canton and Shanghai, courses in French—perhaps we may even establish entirely French institutions of learning. The former German university of Shanghai, which has been changed since the war into a Franco-Chinese institution, seems clearly marked out to become an important centre of French culture in China.

"In China as well as in Paris we shall seek to make our efforts felt in the intellectual domain. We have no idea of establishing anything like French domination in China. What we desire is to safeguard our moral interests. This, in my estimation, is the best way to achieve that economic alliance between France and China which it will be necessary for us to form with the Chinese Republic if we are to maintain the position in the Far East which we occupied there before the war."

M. Painlevé was asked whether he would co-operate in his work with the missionaries in China.

"I certainly shall," he replied. "We do not underestimate the services rendered by them to the cause of France and we shall work in harmony with them, though we think that instruction by French laymen teachers is at present absolutely necessary. Our combined efforts, I feel sure, will bear the best of fruits.

"By these means, French culture, so highly prized by the intellectual elements in China, will strike deep roots in the young Chinese republic and, little by little, there will arise that confidence in the French which will be the essential condition of our success.

"Far from our minds are all thoughts of thwarting the plans of other nations seeking to extend their influence in the Far East. Our desire is to have an active part in the development of this marvelous land, the resources of which are beyond calculation.

"I have already explained how we can have a part in the intellectual and scientific development of China. There remains the economic field. There also we can exert considerable influence. Unfortunately it will not, after the way France has been bled by the war, be possible for us for a long time yet to invest our capital in China, but, thanks to the confidence which we mean to inspire among the Chinese, we shall be able to start enterprises in China with the financial co-operation of the Chinese themselves. Like the French, the Chinese nation, which is very thrifty, as its 'woollen sock,' in which it hoards its savings, and it will not hesitate, I feel sure, to invest these savings in enterprise launched by Frenchmen. As a result of this we shall not only have inculcated the principles of French culture in Chinese minds and maintained our pristine influence in China, but also we shall have laid the foundations of a solid economic alliance destined to be profitable both to France and to China."

A Big British Industry

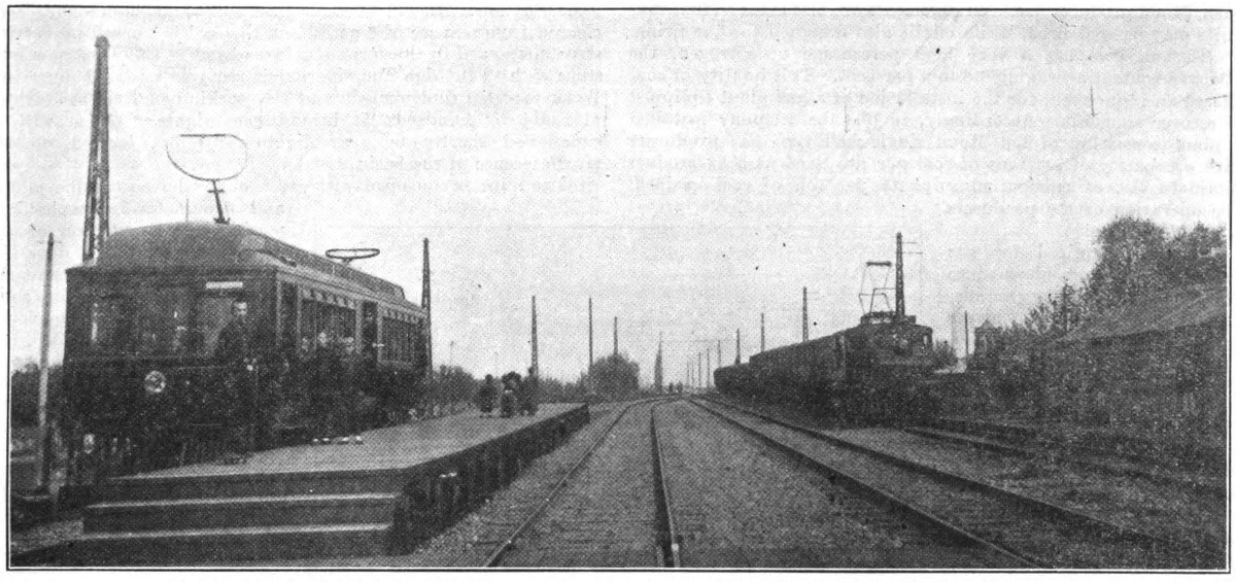
The manufacture of blow lamps, brazing outfits and oil stoves is well known to have been largely in the hands of Swedes and Germans in pre-war times. When the war started both the British and French governments found to their cost they had been dependent upon the importations of these goods for many years. The British authorities therefore approached certain British firms with a view of supplying these goods, and one of the first to respond to the call was the Kitson Empire Lighting Co., Ltd., of Stamford, Lincolnshire, who have devoted a considerable portion of their extensive works to their manufacture. They have recently made many improvements in construction, and they claim to have the simplest and most efficient lamps and stoves that have yet been placed on the market. As is well-known, they are the pioneers in incandescent oil lighting and the "Kitson" and "Kelite" lamps are world famous.

In their new "A" type of lamp, which has just been placed on the market, they have completed a device which enables the user to operate these lamps a whole season without cleaning. In this lamp the vapouriser is so designed that the cleaning operation is only necessary about once in 6 months, and it is simplicity itself. In the stoves they have a similar device which enables the users to take out the filtering material, burn out the carbon and replace it.

The Kitson Company claim to be the largest manufacturers of these various goods now in the United Kingdom, and it appears that what was once a foreign monopoly is now a regular well-established British industry. It may be well to mention that the whole of these vapour burning devices originated from the inventions of Mr. Arthur Kitson when a resident in the United States.

Want Fire Fighting Apparatus

Canton will soon have modern fire apparatus. At a meeting held recently when representative citizens and officials attended, it was decided that $30,000 be appropriated at once by the Canton Fire Protective Association to procure two motor fire engines immediately. Until all funds are raised, Mr. Chan Lim Pak, of the Hongkong and Shanghai Bank, Mr. Kan Kum Shek, of the Nanyang Brothers Tobacco Company, and the Police Bureau will each contribute $1,000 for the enterprise. Moreover, Mr. Chan and Mr. Kan will make a loan of $10,000 each to early complete the fund. while the General Chamber of Commerce of Canton will lend $5,000. A committee of fifteen, with Mr. Chan Lim Pak as chairman, Mr. Chan Min Yu, vice-chairman, Mr. Chan Lim Chung, treasurer, and Mr. Lo Shuit Po, secretary, has been appointed to execute the scheme.



Passenger Motor Car and Freight Locomotive in Operation, South Manchurian Railway's Electrified Lines

The Fushun Colliery and Power Plants of the South Manchurian Railway

By S. Nakaya, Chief Engineer, Fushun Colliery, and J. R. Blakeslee, Foreign Department, General Electric Company

THE South Manchuria Railway is a standard gauge steam road located in Manchuria, and it extends from the seaports of Dalny and Port Arthur to Changchun where it connects with the Chinese Eastern Railway, which in turn connects with the trans-Siberian Railway. A branch extends to the port of Antung, connecting with the Korean Railway. A further branch extends to the Fushun Colliery, passing through the city of Mukden where is located a modern lighting plant equipped with a Curtis turbine.

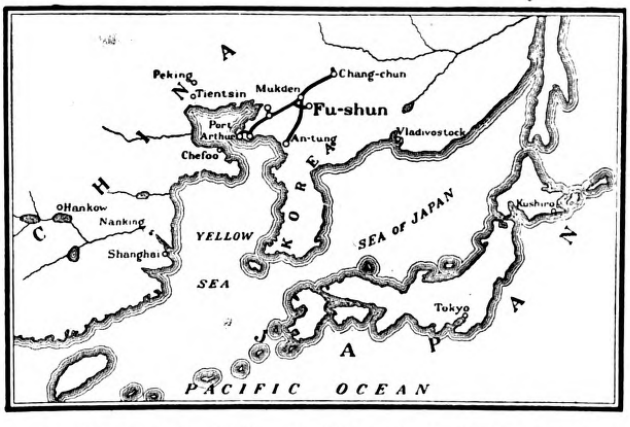
The coal mines in the Fushun district were first worked by the Koreans 600 years ago, the coal being used by them in baking earthernware. On the occupation by the Chinese, mining was entirely suspended. During the Russo-Japanese war the mines were worked on a small scale by the Russians, but not until 1907, when the property was transferred to the South Manchuria Railway, was mining undertaken on a large scale.

The coal field covers about 19 square miles and coal is mined from the Chien-chin-tzai, Yang-pai-pu, and Lao-hu-tai pits, from the Oyama and Togo shafts, and open-cut mining is carried on at Ku-chen-tzu. A new slope has also been recently opened at Wau-tah-oh.

The main coal bearing district consists of shale with a thick coal seam. The shale overlying the coal is very thick and partly bituminous, being about 2,000 ft. measured by outcrops. The seam varies in thickness from 78 to 280 ft.; and the coal obtained is bituminous caking of a very uniform quality and is especially suited for gas making and steam raising. The analysis of an average sample follows:

Moisture	7.00 per cent.
Volatile matter	40.00 per cent.
Fixed carbon	48.00 per cent.
Ash	4.00 per cent.
Sulphur	0.80 per cent.
Specific gravity	1.28 per cent.
Heating value per lb. of coal	12,400 B.t.u.

There are at present two power stations which supply three-phase 60-cycle 2,200-volt current to all the pits, electric railway, electric lighting both on the surface and underground, and the electro-chemical industry.



Location of Fushun Colliery and the South Manchurian Railway

Plant No. 1 is a steam-power plant, coal being burned in the boilers for raising steam. This station has a capacity of 4,500 kw. in high-pressure condensing turbines and is equipped with Babcock and Wilcox boilers, mechanical stokers, and superheaters. The station auxiliaries are either motor- or turbine-driven.

Plant No. 2 with a present capacity of 3,000 kw. in mixed-pressure turbines is connected in parallel with station No. 1 and runs continuously at full load, while the latter takes care of the peaks. The boiler equipment consists of eight Babcock and Wilcox boilers designed to

burn Mond producer gas. Arrangements are also made so that four units may be coal fired, while one is also designed for tar firing.

Fushun coal has a very high percentage of nitrogen, the nitrogen content averaging 1.8 to 2 per cent. This quality of coal offered an inducement for the installation of a gas plant equipped to recover ammonia. Accordingly, in 1914 the company installed a plant consisting of ten Mond single-shell type gas producers with a capacity of 240 tons of coal per day, and as a by-product obtain 95 lbs. of ammonium sulphate per ton of coal gasified. The operation of the producers is as follows:

The air required for gas generation is first blown into an air saturator by engine-driven blows. Here the air is heated and saturated by hot water conducted from the coolers. On leaving the saturator, the moistened air is mixed with low-pressure steam from the turbines and then collected in the air main from which it finally enters the producers through the superheaters where it is further heated by hot gases.

Gas from the superheaters is conducted to the gas collecting main, then passed through mechanical washers where it is cleaned of dust. It subsequently passes into the ammonia absorbers in which it comes into contact with a spray of acid which recovers the ammonia in the form of ammonium sulphate. Thus freed of dust and ammonia, the gas is collected through two coolers into a gas holder, and there held ready to be served as fuel to the boilers by centrifugal exhausters.

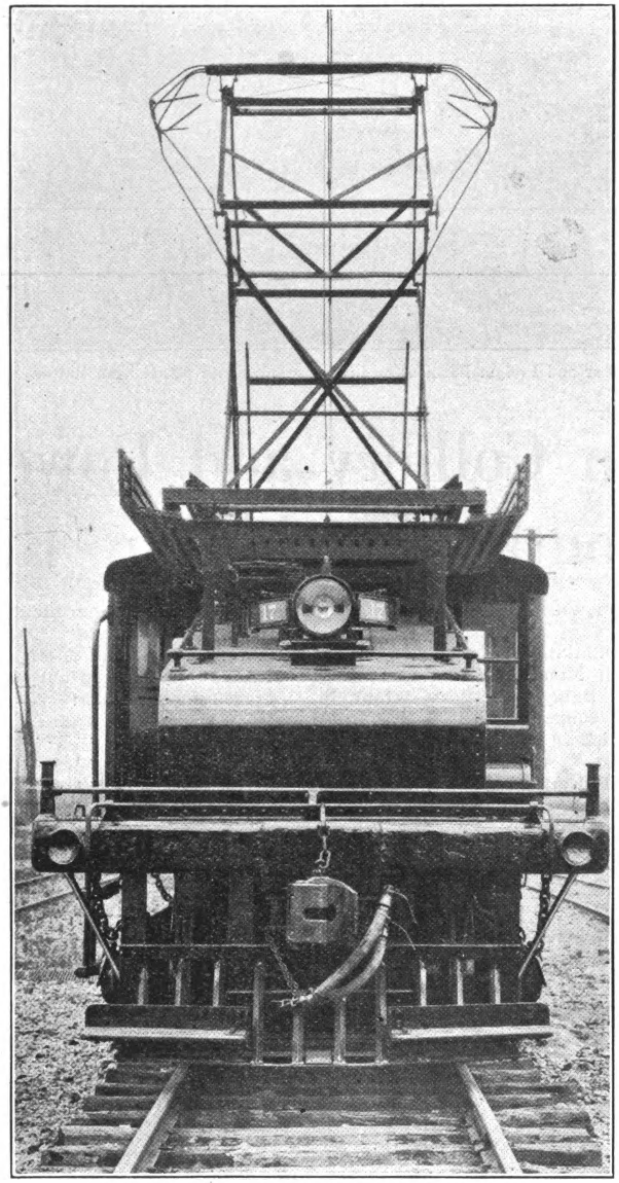
This application of gas-producer plant, gas-fired steam boilers, and mixed-pressure turbines for supplying the necessary low-pressure steam to the producers, is probably the first of its kind ever tried; and six years experience has proved the operation to be very economical.

The heavy demand for ammonium sulphate and the rapid progress in developing the mines necessitated the extension of the plant. There are now two banks of eleven producer sets and three 3,000-kw., 0.8 p-f., three-phase, 60-cycle, 2,200-volt Curtis turbines running at 3,600 r.p.m. Two of these units operate condensing and one non-condensing, the exhaust steam being used by the producers. The two stations operating together have an ultimate capacity of 16,500 kw.

The mines are operated principally by the sand flushing or hydraulic storage system. Steam shovels are employed for sand excavating and the flushing material is transported by a 1,200-volt direct-current trolley railway.

The open-cut coal mining system at the Ku-chen-tzu mine is unique. This location comprises about 50 acres of nearly flat farm land underlying which coal is found at a depth of from 30 to 250 ft.; it is estimated that this district contains not less than 6,000,000 tons. At the present time soils and shales have been cleared from a space of 8 acres, and the coal is worked by cutting steps downward in the form of a large basin. There are now nine steps each 12 ft. high and the coal is removed by hand shoveling. Work proceeds continuously and the working surfaces are lighted at night by hundreds of incandescent lights. These will be superseded shortly by searchlight projectors located on the circumference of the basin.

The mine is equipped with seven motor-driven turbine pumps and two motor-driven haulage machines. Excavation of the top-soil and shale is done by means of steam shovels and the waste material used for sand flushing in the existing shafts and pits. One-half ton tubs are used in removing the coal. After the addition of two 300-h.p. haulage machines and two motor-driven pumps, the output of this mine is expected to reach 2,000 tons per day.



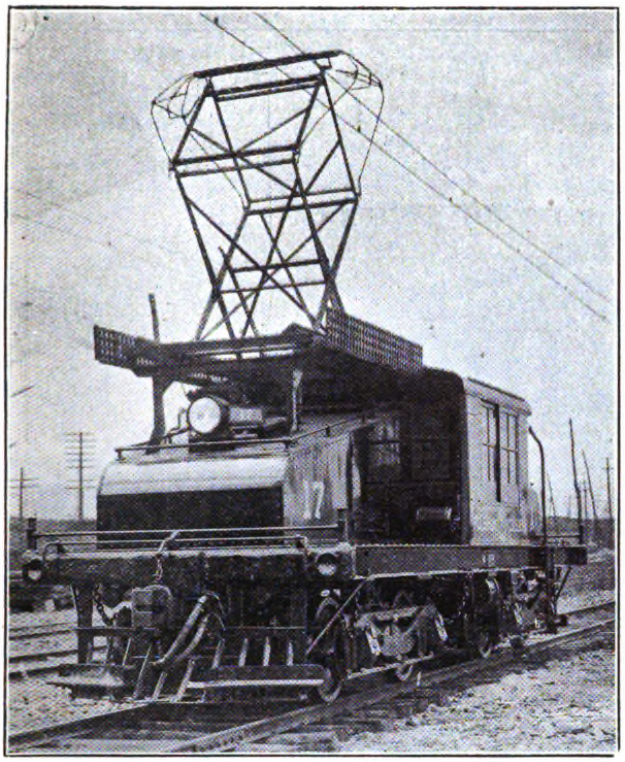
1,200 Volt Locomotive, South Manchurian Railway

The arrangement at the Oyama and Togo pits is similar, each being provided with two brick-lined shafts about 1,234 ft. deep. The inside diameter for the downcast is 21 ft. and for the upcast is 18 ft. Single-deck cages, having a capacity of four tubs and two tubs respectively, are operated at present by means of Corliss winding engines. The tubs have a capacity of 20.3 cu. ft. and are operated on 24-in. gauge tracks. Along the inclines to the shafts the tubs are moved by single-haulage gear manufactured in the colliery's own workshops and driven by three-phase motors having special enclosing covers for operating in the explosive atmosphere. Each pit is equipped with eight haulage machines of 5- to 150-h.p. capacity. On equipments larger than 50 h.p. the regenerative system is adopted, the motors operating as synchronous generators and returning power to the line when lowering the empty tubs to the lower workings. This is claimed to be the first extensive use of this system in mine haulage.

The screening plant is electrically operated and has a capacity of 510 tons of coal per hour. Coal from the screens drop on conveyors, and the slate and dirt is removed by coolies. At the end of the conveyors the screened and dressed coal is loaded into railroad cars by deflecting loading jibs.

Each mine is provided with engine-driven ventilators, and a pumping station located near the bottom of the shaft is equipped with high-lift turbine pumps driven by high-speed three-phase induction motors. Mine operations are to be extended by the addition of two 900-h.p., two 550-h.p., and five 460-h.p., induction motors. The two larger sixes run at 1,200 r.p.m., while the small units run at 1,800 r.p.m. The motors are directly connected to turbine pumps.

The colliery railway with a total length of 43 miles is the



1,200 Volt Locomotive, South Manchurian Railway

first 1,200-volt direct-current system in the Far East and has been in successful operation since 1914. The overhead construction is of the 5-point catenary suspension type with a pole spacing of 150 ft., angle-iron lattice poles being used. The trolley wire is of No. 0000 B. & S. grooved copper. The automatic block signal system is employed.

The rolling stock consists of a total of eight electric locomotives, three of which are 45-ton units, each equipped with four 100-h.p. motors and capable of handling 400 tons on a level tangent track. For passenger service, a number of 36-ton cars are included, each equipped with Type M control and air brakes.

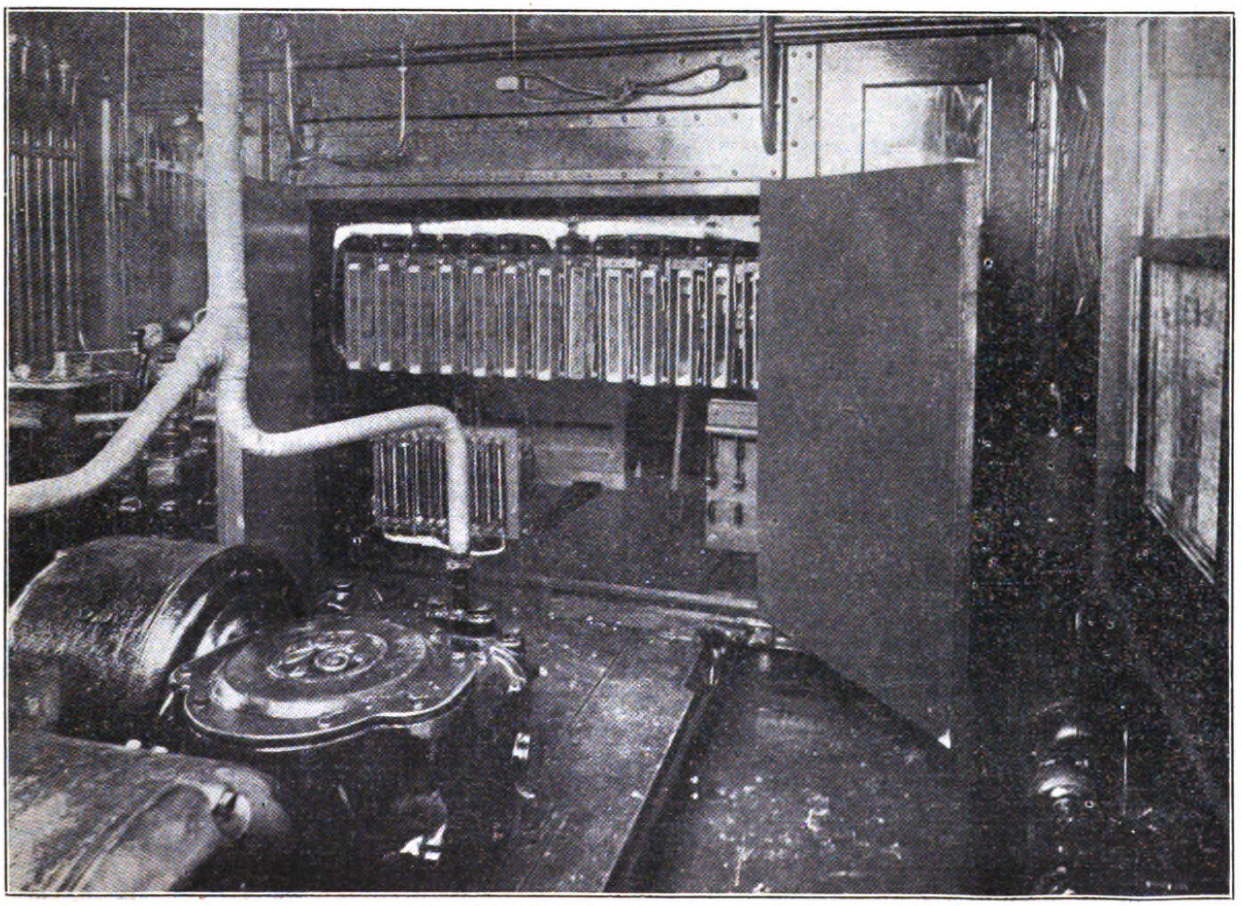
Power for the railway is obtained from three 400-kw. synchronous motor-generator sets converting three-phase 60-cycle current at 2,200 volts to 1,200 volts direct current. These sets are located in power station No. 2 and an extension of one 750-kw. set is to be installed.

Electric light is provided by 17,000 lamps, consuming nearly 450 kw. Three thousand of these are located in the various pits and the others are used for office, workshop, hospital and town lighting.

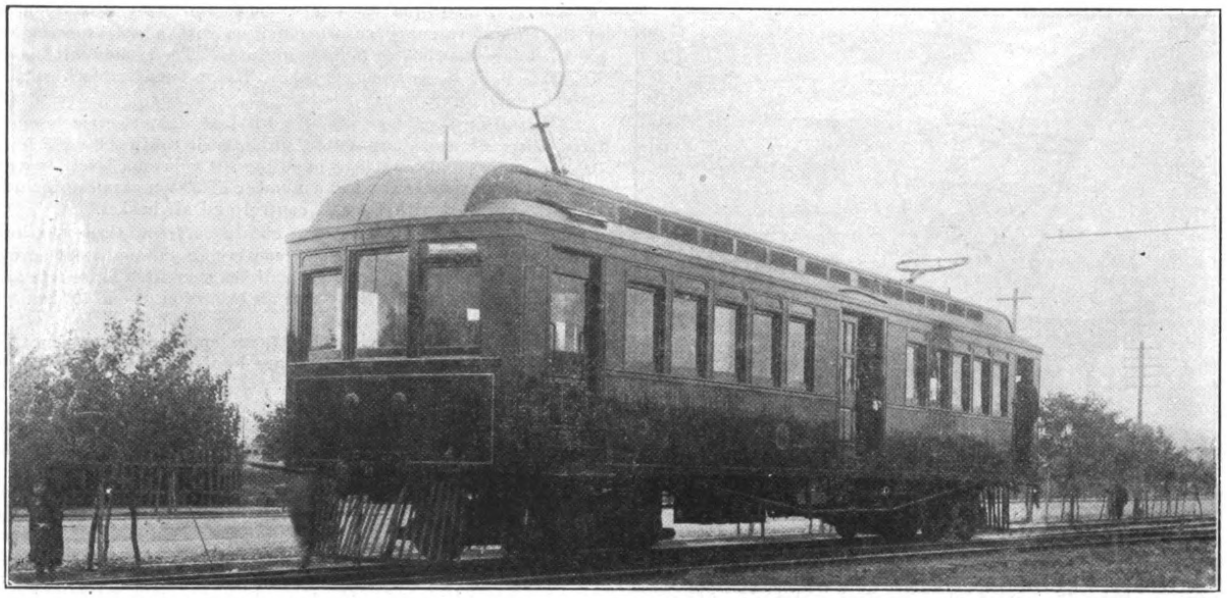
The plant is provided with a machine shop, blacksmith shop, foundry, and carpenter shop, in which a great deal of the apparatus used is manufactured and repaired.

A rescue station and laboratory provides means for all necessary rescue work and chemical analyses. The heat for the engineers', clerks', and foremen's quarters, offices, school, library, etc., is furnished by a central heating station.

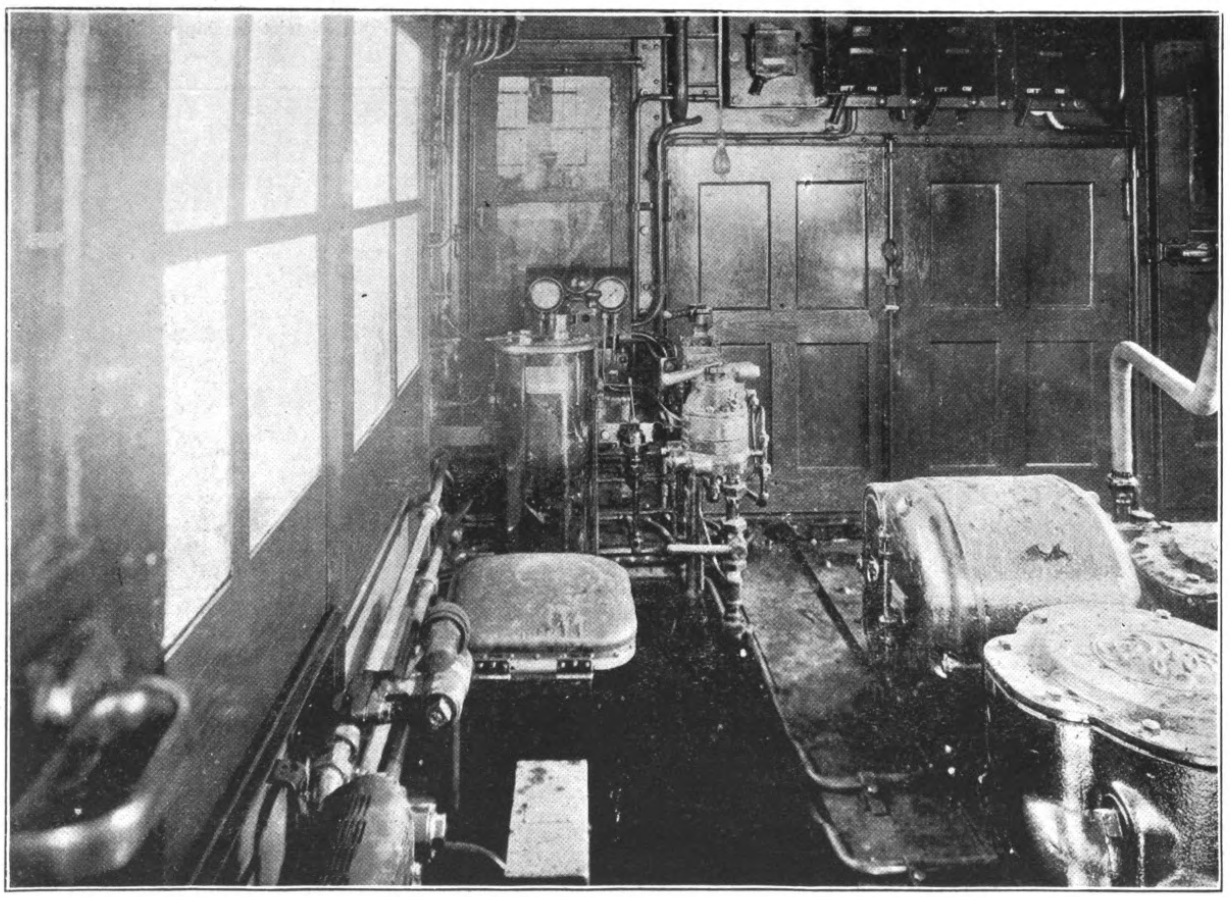
The plant is also provided with a brick factory having a capacity of 20,000 bricks per day. A gas works supplies gas to all houses for cooking purposes; and a sulphuric acid plant produces 48 tons of chamber acid per day. The acid plant's output is employed in the manufacture of ammonium sulphate by the Mond recovery plant, as well as in the electro-chemical industry mentioned. Coal from this district is shipped throughout the Far East.



No. 1 End of Main Cab, 1,200 Volt Locomotive



35-ton 1,200 volt Passenger Motor Car, equipped with two General Electric Co.'s 205-1,200 volt Motors, South Manchurian Railway

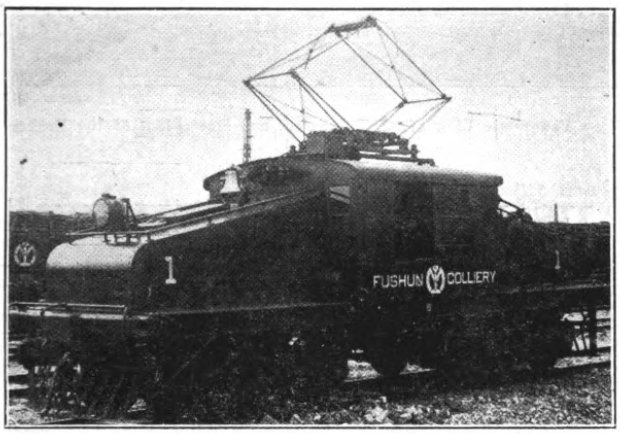


No. 2 end of Main Cab, 1,200 volt Locomotive

Japanese Electric Railway Developments

Many important electric railway developments are now proceeding in Japan. The following is a summary of the principal projects:—

The underground railway project of the Musashi Electric Company, which has received the sanction of the authorities, will be commenced at once in order to open traffic on the Nakashibuya-Hibiya line in 1923. A surface line will extend 15 miles between Nakashibuya and Yokohama, and will be completed in 1922.



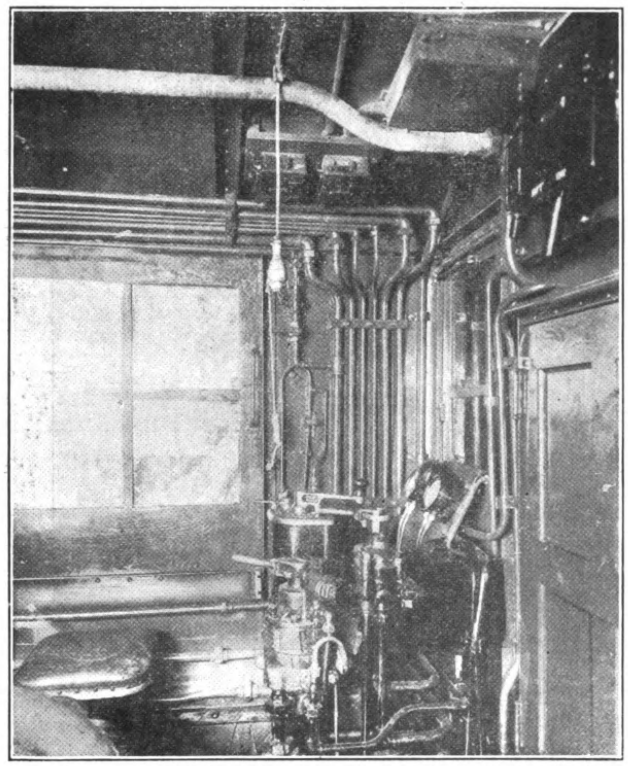
40-ton 1,200 volt Freight Locomotive, equipped with Type M control and General Electric 206-600 volt Motors, at work on the Fushun Colliery Line

Extensions of the electric railways running out of Tokyo which will link many important centres with the capital are now planned by the railway department.

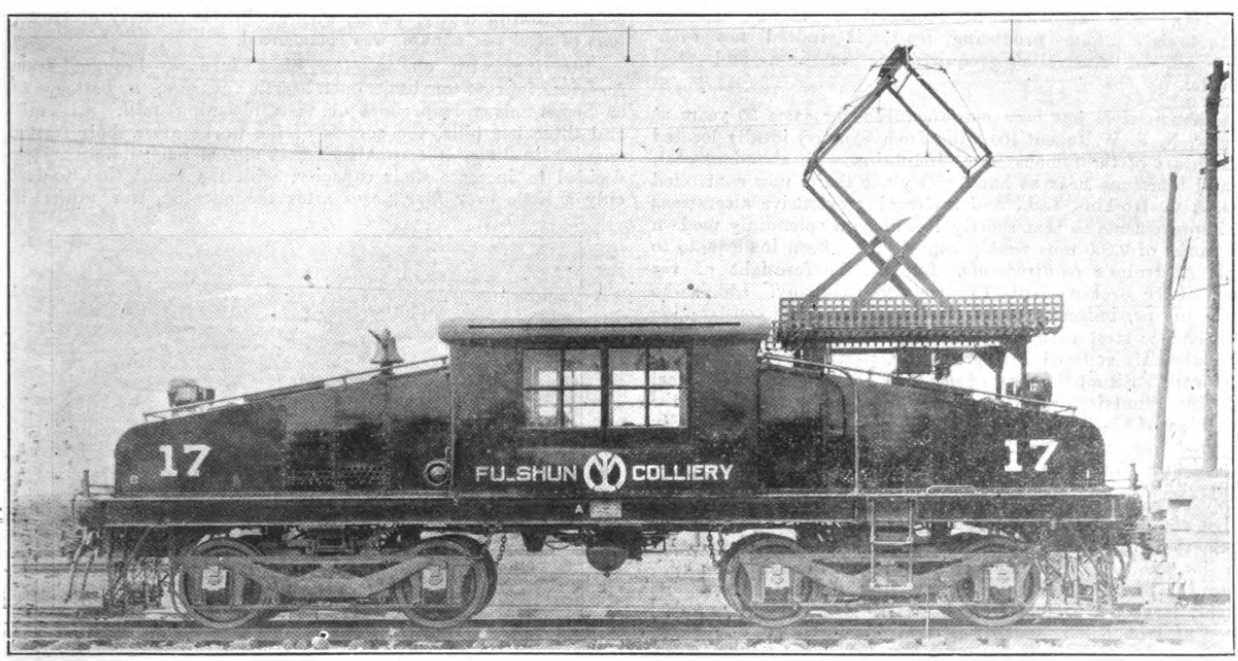
A decision has already been reached to run an electric line from Ryogoku to Chiba and from Kichijoji to Hachioji. Another extension under consideration is that of the present Tokyo-Yokohama electric line to Odawara and Yokosuka. A new electric line out of Uyeno station to Takasaki is also planned.

The new electric railway between Kobe and Osaka, recently opened, is intended primarily for through passenger traffic and there are but 11 stations on the route. The old line has more than 30 stations. The present terminus of the new line is at Kumohi, in the eastern part of Kobe, but as soon as an official charter is granted the intention is to extend as far as Kanomachi.

The Chichibu Railway Company will extend its electric railway line by 4.70 miles between Shirakawamura and Kagemori-mura, Chichibu-gun, Saitama prefecture



Control Apparatus, 1,200 volt Locomotive in operation at Fushun Colliery



1,200-volt General Electric Co.'s Locomotive in operation at Fushun Colliery

corporated into the revenue of the Formosan government general from the current financial year.

Japan's Postal Savings.—Investigations by the Japanese department of communications show that the amount of money deposited at the postal savings banks throughout Japan on June 26 totaled Y.784,753,410, the depositors concerned numbering 23,174,838. Compared with the end of the previous month, the figures show an increase of 163,510 in the number of depositors and of Y.34,878,020 in deposits.

Japanese Model Pawn Shop.—The Mitsubishi interests are contemplating the establishment of a model pawn shop in Japan, to be capitalized at Y.100,000, primarily for the benefit of the poorer classes. There are now 3,000 pawn brokers in Nippon, but the rate of interest is enormous, usually being 4 sen per one yen per day. The proposed organization would charge 1 sen and pay no dividends to the shareholders.

Relieving Yarn Merchants.—The advance of funds to cotton yarn merchants for export trade made by the Bank of Japan through the Japanese exchange banks totaled Y.13,000,000 up to June 22. The bank continues making advances up to the extent agreed upon, viz., Y.40 million. For the relief of cotton yarn merchants an agreement has been reached between the syndicate banks and the cotton yarn syndicate, in pursuance of which an initial Y.2 million was handed over on the security of the yarn on June 22.

Japanese Banks.—The Japanese department of finance gives the number of banks doing business on June 26 as 2,072, with a combined capitalization of Y.1,800,474,885. The figure is composed of 7 special banks with a combined capitalization of of Y.310,000,000; 46 farmers' and mechanics' banks with a combined capitalization of Y.68,500,000; 656 savings banks with a combined capitalization of Y.335,350,150; 1,350 ordinary banks with a combined capitalization of Y.1,081,449,735; a branch of the Bank of Chosen and 12 branches of foreign banks with a combined capitalization of Y.5,175,000. Compared with returns made at the end of last December, there was an addition of one ordinary bank with a capital of Y.1,000,000 and the augmentation of capitalization by 31 banks, the amount of the increased capital being Y.35,041,550. The number of those establishments engaged in monetary business other than banking, were 226 companies, with a combined capitalization of Y.412,022,000 in addition to 23 companies carrying on the sale and purchase of negotiable instruments and other bonds, their total capitalization amounting to Y.4,244,000.

Japan's Revenue Excess.—According to returns issued by the Japanese department of finance, the actual revenue for the current fiscal year which ends this month, shows considerable excess over the budget estimates, as detailed in the following table:

Items	Excess Yen
Taxes	170,256,000
Land tax (decrease)	53,749,000
Income tax	67,000,000
Business tax	10,294,000
Sake tax	28,275,000
Sugar tax	14,942,000
Textiles tax	14,574,000
Customs tax	21,623,000
Revenue stamps	46,947,000
Government enterprises	30,000,000

As the above figures show, with the exception of the land tax, there is a considerable increase in every item of the revenue as compared with the figure estimated in the budget, the gross excess aggregating nearly Y.250,000,000 at the end of May.

Pacific Development Company.—Pacific Development Company is offering a block of stock to its shareholders at par, $50, each holder of two shares of present stock outstanding having a right to subscribe to one share of new stock. Rights accrue to shareholders of record June 19 and subscriptions are payable in full July 3 at the option of shareholders, or 25 per cent. on July 3 and the balance in three monthly installments of 25 per cent. each. The whole offering has been underwritten by Hayden, Stone & Co. Stockholders recently authorized an increase in the authorized capital stock from $10,000,000 to $25,000,000. The new offering will bring the amount outstanding up to $12,750,000. The Pacific Development Corporation controls the following well-known enterprises: The Pacific Commercial Company, transacting business in Australia and the Orient; Hartman-Pacific Company, with offices in a dozen big American commercial centres; International Vegetable Oil Company of Georgia; American Machinery and Manufacturing Company, also of Georgia, and the Andersen, Meyer Company of China.

Bank of Chosen.—The report of the Bank of Chosen gives a brief survey of financial conditions in Korea. In spite of the drought last summer and cholera and influenza epidemics in the later months, the export trade expanded considerably, and good progress has been made with the extension and improvement of transport facilities. At present the railway mileage is very much smaller than that of Japan proper, where there are 8,640 miles of line working, as against 1,251 in Chosen. But during 1919 the aggregate mileage of new lines sanctioned by the government amounted to 1,085 miles, and at the end of the year there were over 1,500 miles in course of construction. During the second half of the year the capital of new companies amounted to sixty-one million yen, an increase of 50 per cent. over the corresponding period of 1918, and of nearly fourteen millions over the total for the whole of that year. Of the total, over thirty-five millions was raised by manufacturing concerns, while three new banks account for Y.5,200,000. The country's exports amounted to Y.125½ million, and imports to Y.159½ millions, showing an increase of 25 per cent. in exports and of 74 per cent. in imports, and the balance of trade, which was favorable in 1918, has, as in the case of Japan, again become adverse.

RAILWAYS

Japan Has Powerful Locomotives.—Four locomotives of a more powerful type than any hitherto constructed in Japan have been built in the workshops of the Western Division of the Imperial Government Railways at Hamamatsu. They have 1,300 horsepower and a maximum speed of 66 miles an hour, while the previous record in Japan was 830 horsepower, with a maximum speed of 60 miles an hour. Under ordinary conditions they will pull a load of 350 tons at 30 miles an hour, the previous best speed with this load being 20 miles an hour.

Canton-Hankow Railway.—The Canton military government promises that the forced contribution of $30,000 per month from the Kwangtung section of the Canton-Hankow Railway will be repaid.

S. M. R. Earnings.—The report of the South Manchuria Railroad Company for the term just ended, puts the gross receipts at Y.153,133,387,090, with the gross disbursements at Y.128,758,422,846, the balance, remaining Y.24,374,964,240, the net profit realized during the term.

The principal items of receipts are Y.67,060,720 for railroad revenue; Y.1,707,903 for steamer receipts; Y.6,069,883 for harbor dues; Y.61,200,547 for mining enterprises; Y.3,551,964 for industrial revenue; Y.2,796,224 for receipts in iron foundries; Y.2,800,414 for electrical enterprises; Y.723,645 for general business revenue; Y.1,179,514 of hotel revenue; Y.3,446,140 local revenue; Y.1,654,690 interest from revenue deposited and Y.941,736 of miscellaneous receipts.

Shimonoseki Tunnel, Japan.—It is stated by a member of the Railway Board of the Imperial Japanese government that a commencement has been made with the survey work preparatory to the long contemplated plan of constructing a submarine railway tunnel between Shimonoseki and Moji. The survey is estimated to cost Y.1,800,000 (about £200,000), and will take about a year to complete. It is hoped that the tunnel will be opened to traffic within seven years, but under the present unsettled labor conditions, this estimate can be but vague.

As regards the details of this scheme, a correspondent states that, so as to avoid speculation in land, the government is silent, but it is believed that the descent of the tunnel will commence about a mile from the coast, and at first run under the narrow channel between the mainland and the little island of Hikoshima. It will run under this island, on which probably an underground station will be built, and then run under the actual straits of Shimonoseki as far as the Dairi district, a few miles to the west of Moji, where it will join the Kiushiu railway. It is estimated that the construction of the tunnel, which will be six miles in length, will cost 25 million yen.

Monorail Tramway, Tokyo.—With a view to relieving the congestion of traveling in Tokyo and as an auxiliary to the municipal electric-car service, several business men of the capital have approached the government for permission to build a monorail electric tramway over the rivers and canals in Tokyo. The scheme proposes to introduce cars capable of accommodating 50 persons and running at an average speed of about 25 miles per hour. The estimated cost is $815,000 per mile and the proposed capital of the company is $7,500,000.

Japan's Classification Society.—The Imperial Marine Association, or, in Japanese, Teikoku Kaiji Kyokai, is now approaching the completion of its organization. The association will work in close affiliation with the American Bureau of Shipping, the British Corporation, and the Registro Navale Italiano, each representing the others in its respective countries. The Japanese society is to adopt the regulations of the British Corporation, which are conceded to be superior to those of Lloyd's Register. At the present time, K. Minato, representing the Japanese government, is in the United States making a thorough study of the relations of the government to classification societies.

Ditching the "Deadwood."—The management of the Kwangtung Yueh-Han (Canton-Hankow) Railroad has reduced its employes by about fifty, in order to save from $5,000 to $6,000 a month, according to vernacular press reports. It is understood that the discharge of this number of men will not affect the efficiency of the road, as many of the discharged were superfluous officials who have done nothing for the company, only drawing salaries in return for political service rendered or because of their being relatives of those who are in high authority.

SHIPPING

New Canadian-Oriental Service.—The Canadian government has decided to open cargo boat service to India and the Far East consisting of three lines, one to run from the Pacific Coast to the Orient and Calcutta, a second to be operated on the Atlantic through the Mediterranean to India, Ceylon

Engineering, Financial, Industrial and Commercial News

RAILWAYS, NEW LINES, SUPPLIES, ETC

New Sumatra Line.—In the Asahan district of Sumatra the Deli Railway Company has obtained permission to run a line from Kisaran to Kota Pinang.

Rolling Stock, New Zealand.—The New Zealand government will expend about $8,516,375 for the purchase of rolling stock covering 65 locomotives, 35 passenger cars, 12 brake vans, and 4,092 freight cars.

Tenders will be invited in England for the manufacture of 25 locomotives and 2,500 freight cars; and tenders in New Zealand for the building of 1,000 freight cars. In addition the department will build 20 locomotives, 35 passenger cars, 12 brake vans, and 592 freight cars in its own shops. Twenty locomotives are now being built under contract by Messrs. A. and G. Price, all to be delivered within five years.

New Celebes Line.—The result of the public tender for the laying down of railways in South Celebes at which only Dutch firms competed is as follows:—Messrs. Zuurmondt and Vrouwenhoven 1,170.000 glds.; Mesman and De Munnik 1,125.000 glds.; Volker 1,108,000 glds.

This is the first time that the method of public tender has been followed for such work.

Electric Monorail Tramway for Tokyo.—With a view to relieving the congestion of traveling in Tokyo and as an auxiliary to the municipal electric-car service, business men have approached the government for permission to build a monorail electric tramway over the rivers and canals in Tokyo. The scheme proposes to introduce cars capable of accommodating 50 persons and running at an average speed of about 25 miles per hour. The estimated cost of such a line is $815,000 per mile and the proposed capital of the company is $7,500,000.

Electrification Rejected.—The railway electrification plan proposed by Japan's Railway Department failed to obtain the approval of the House of Peers, and the government must wait until next session to get it passed. In business circles the failure of the electrification scheme is believed to be due to unjustified popular suspicion in regard to the Railway Department's motives in its attempt to create a semi-official power company.

Proposed Nanchang-Chaochow Railway.—Canton, Chaochow and Swatow promoters are reported to have formed a plan to construct a Nanchang-Chaochow railway at a cost of $6,000,000. One of the objects of the plan is said to be to get rid of foreign interference in Chinese communications and transportation.

[If true, the promoters had better get in touch with the Railway Board at Peking, where they may be informed that the concession for this particular line has been promised to Pearsons & Sons, the great british firm of engineers and contractors.—Ed., F.E.R.]

New Passenger Coaches, Japan.—Thirty-seven new passenger coaches are now under construction for use on the express trains between Tokyo and Shimonoseki. These cars are designed to have less vibration and less noise than the old ones. They will be six inches larger in height and nine inches larger in width.

Credit for New Lines, Japan.—The credit spread over a period of ten years for the construction of new lines has been granted by both Houses of the Diet.

The construction program calls for five standard and twenty-one light railway lines. The total credit for the light railways is Y.155,000,000. When all construction credits for the ten years to come are taken together they will aggregate Y.556,000,000.

The five standard lines to be built under the plan are 224 miles in length, and the total length of light railways is estimated at 772 miles. While the standard railway lines are to be built in comparatively remote parts of the country some of the light railways are to be laid in more developed parts of the country.

Among the projects are lines between Takamatsu Tokushima and Shikoku; Matsuyama and Yawatahama, and Shikoku; between Imari, a well known pottery center in Kyushu, and Sasebo; one between Ota and Fukui, in the Habutai districts; and one between Nafiao and Wajima, a lacquer ware centre in Ishikawa prefecture.

Korean Railway Development.—When the projected lines are completed in Korea, over 1,500 miles of railway will be added to those already laid, which approximate 1,160 miles of broad-gauge and 188 miles of light railways. The construction of a light railway has been commenced between Hamheung and Huchang, aiming at the exploitation of North Korea, along the Yalu River. Another company with a nominal capital of $7,500,000 will be formed for laying a light railway, which is to serve in the exploitation of the forests and of the mineral resources along the Tumen and Yalu Rivers. This will consist of 2 lines, with a total length of 205 miles. It is hoped that construction will be commenced next year of a railway in Western Korea projected by the Oriental Development Co. A survey has already been made of the route to be covered by the lines of the North Korea Railway Co., which is in process of organization, and capitalized at $5,000,000.

New Zealand Railway Earnings.—During the first 11 months of the fiscal year ended March 31, 1920, the railways of the Dominion earned $25,020,817, as compared with $24,277,177 for the entire fiscal year ended with March 31, 1919, with expenditures amounting to $17,751,994 and $16,101,180, respectively. During the 11 months for the fiscal year ended March 31, 1920, there were 11,466,235 passengers and 5,490,448 tons of freight carried, as compared with 13,355,893 passengers and 5,661,340 tons of freight for the entire fiscal year ended with March 31, 1914.

S.M.R. Freight Returns.—The South Manchurian Railway Company reports that during the first six months of the year 793,431 tons of cargo were carried on its lines. This was a decrease of 109,324 tons compared with the same period last year.

Building the Bagdad Railway from the East.—A revival of the Bosporus and Persian Gulf railway project is announced in the building of a road connecting Bagdad with Basra. This was to have been the easternmost link of the great German Berlin-to-Bagdad scheme, and the extension which was to carry German imperialism to the Persian Gulf and to the gates of the British Indian empire. This link, however, in the original German project was the part of the road which it seemed would be the last to be built. In the German scheme Koweit and not Basra was to be the eastern terminus of the road. The fact that there were indications that the Germans were preparing to make Koweit eventually a naval base caused a halt in the plans. A British company had control of the navigation of the Tigris and another British company sent the products of its Persian oil fields to ports at the head of the Gulf. Thus Great Britain was not inclined to permit the building of a railroad into this region without being assured she could have a master control and that the road would not be a menace to her Eastern possessions. The war brought a solution to these questions. The main line of the road to Bagdad is completed only to Nisibin, 350 miles west of Bagdad, and, the eastern extension will soon be in operation under British control. Under these new conditions Bagdad is first linked up with the world, not from the west but from the east. The British are endeavoring to straighten out affairs in Mesopotamia, over which they have continued to exercise control since the war, through an authority vested in a Mesopotamian administration. This administration has already brought a security to life and a development of industries to Bagdad, and it aims at the completion of important irrigation projects undertaken before the war. The building of the road to Basra, as an outlet of the products of the Mesopotamian valley and an inlet for Western products, would thus appear to be but a part of the development of this ancient region under British influences. The most difficult parts of the main line of the Bagdad railroad have been finished; the tunnel through the Taurus mountains was completed soon after the beginning of the war and the Jerablus bridge over the Euphrates was built in 1915. The Turks used the road during the war as far as Nisibin, and from there carried supplies to Bagdad by motor and caravan. The completion of the new Basra link of 350 miles evidently awaits the final settlement of the fate of Constantinople and the adjustment of national interests in the near East. But it is as important to-day as it was before the war that the completed Bagdad railway, to fulfill its great purpose as a civilizing influence and as a link between the East and West, shall be not a political but a commercial and economical project.

Nationalization of Railways, Japan.—The Minister of Railways has given notice that the nationalization of the Narita Railway and the Koyyetsu Railway will be effected September 1.

Prairie Type Locomotives for the Kin-Han Railway

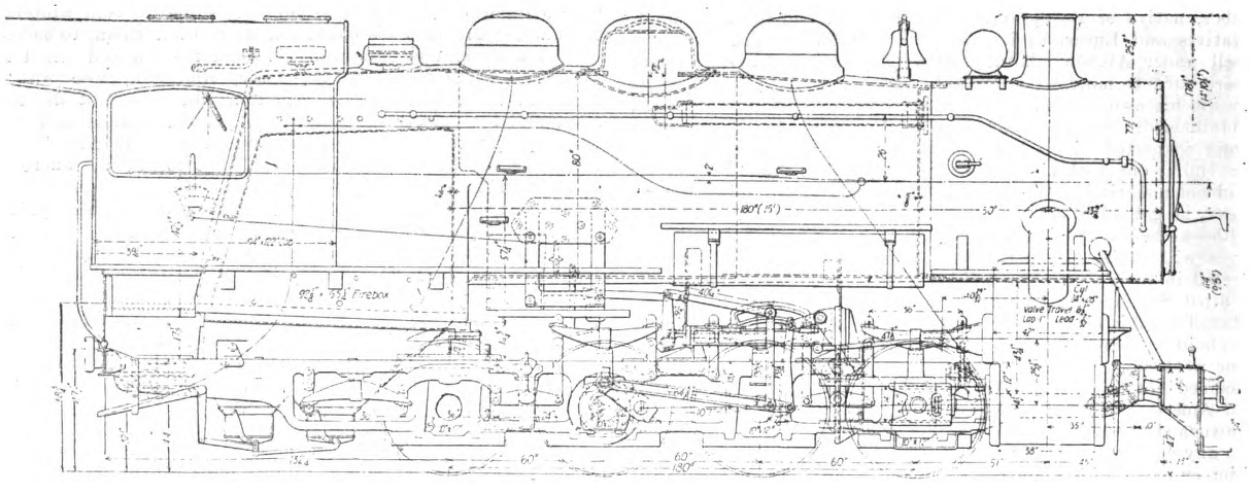
A NUMBER of exceedingly difficult engineering problems had to be met in the design of the new 2-6-2 (Prairie) type locomotives recently secured by the Kin-Han Railway for mixed service on the Peking to Hankow line. Very close limitations of weight for both engine and tender were successfully applied by the Lima Locomotive Works, who also satisfied rigid requirements in connection with the counter-balancing of the reciprocating weights. These locomotives are built to negotiate without trouble 22-degree curves.

The limitations of weights made it necessary to design all the parts as light as possible, consistent with the proper strength. Built-up construction of plates and angles was freely used in main frames and tender frame bracing wherever it was found that such a construction could be satisfactorily employed. Care was taken to produce a symmetrical clean looking design and where feasible, parts were made in one piece. For example, the guide yoke end and link supports were made in an integral casting, thus eliminating bolted connections and reducing the weight of the parts.

was necessary in making the tender design to meet the limitations of axle load as given in the specifications.

In general, the locomotive was designed along the lines of American practice and the builders were given a free hand in the construction of details so long as the limitations of the specifications were met. General dimensions of the locomotive, as well as the actual weights and weight limitations are given in the attached table.

Type	2-6-2
Service	Mixed
Cylinders	20 by 26 in.
Valves	12-in. piston
Tractive power	25,500 lb.
Boiler, type	Ext. wag. top
Minimum diameter	61 1/16
Working pressure	170 lb.
Firebox, size	54 1/4 by 84 in.
Grate area	31.6 sq. ft.
Kind of fuel	Soft coal
Tubes, number and diameter	130—2 in.
Flues, number and diameter	21—5 3/8



Elevation, Prairie Type Locomotive, Kin-Han Railway

The limit for the dynamic augment at 60 kilometers per hour was specified at 15 per cent. of the static wheel load. In order to come within these requirements, and at the same time provide the proper counterbalance, the reciprocating parts were made of very light design and a special method was employed to secure an exact adjustment of the counter weights in the driving wheels. The dynamic augment requirements were met and by means of careful adjustment the proper counterbalance was secured for the reciprocating weights.

The boiler is of the extended wagon top type, fitted with a combustion chamber. The locomotives were equipped with Type "A" superheaters. The reversing mechanism is of the Lawson patented screw type which provides for easy operation and is fitted with a positive locking device and an indicator which shows the exact cut-off at which the engine is being operated.

The tender is the 6-wheel type, rigid wheel base, with plate side frames, the boxes working in pedestals riveted to the outside plates. The two rear pair of wheels are equalized. Great care

Heating surface, firebox	207 sq. ft.*
Tubes and flues	1418 sq. ft.
Total	1625 sq. ft.
Superheating surface	366 sq. ft.
Driving wheels, diameter	59 in.
Journals	8 1/2 by 11 in.
Wheel base, driving	13 ft. 10 in.
Total engine	31 ft. 7 in.
Total engine and tender	53 ft. 19 in.
Weight on driving wheels	97,200 lb.
Total engine	156,000 lb.
Total engine and tender	247,000 lb.
Tender, wheels, number	Six
Journals	5 1/2 by 10 1/2 in.
Capacity, water	4800 gals.
Capacity, fuel	13,300 lb.

*Includes arch tubes.

A Chinese Plan for Chinese Railway Development

Dr. Sun Yat-sen's Fourth Program for the International Development of China

This is the fourth part of Dr. Sun's important contribution towards the solution of China's most urgent problem. The first program was published in THE FAR EASTERN REVIEW for June, 1919. It embraced (1) the construction of a great Northern port on the Gulf of Pechihli; (2) the building of a system of railways from the great Northern port to the Northwestern extremity of China; (3) the colonization of Mongolia and Turkestan; (4) the construction of canals to connect the inland waterway systems of North and Central China with the great Northern port; and (5) the development of the iron and coal fields in Shansi and the construction of an iron and steel works.

The second program appeared in THE FAR EASTERN REVIEW for August, 1919. It comprised (1) a great Eastern port; (2) the regulation of the Yangtze channels and embankments; (3) the construction of river ports; (4) the improvement of existing canals and waterways in connection with the Yangtze, and (5) the establishment of large cement works.

The third program will be found in THE FAR EASTERN REVIEW for June, 1920. It outlined (1) the construction of the Southwestern railway system; (2) the construction of coast ports and fishing harbors; and (3) the establishment of shipbuilding yards and the necessity for a suitable standardized type of inland water vessel.

By Dr. Sun Yat-sen, ex-President of China

PROGRAMME IV.—In my first and third programs, I have described by plans for the Northwestern Railway System and the Southwestern Railway System. The former is for the purpose of relieving the congestion of population in the coast districts and the Yangtze Valley through the colonization of the vast unpopulated territory in Mongolia and Sinkiang, as well as of developing the Great Northern Port. The latter is for the purpose of exploiting the mineral resources of Southwestern China, as well as of developing the Great Southern Port—Canton. More railroads will be needed for the adequate development of the whole country. So in this fourth program, I shall deal entirely with railroads which will complete the 100,000 miles proposed in my introductory part of this International Development Scheme. The program will be as follows:

I. The Central Railway System.
II. The Southeastern Railway System.
III. The Northeastern Railway System.
IV. The Extension of the Northwestern Railway System.
V. The Highland Railway System.
VI The Establishment of Locomotive and Car Factories.

Part I.—The Central Railway System

This will be the most important railway system in China. The area which it serves comprises all of China Proper north of the Yangtze and a part of Mongolia and Sinkiang. The economic nature of this vast region is that the southeastern part is densely populated while the northwestern part is thinly populated, and that the southeastern part possesses great mineral wealth while the northwestern part possesses great potential agricultural resources. So every line of this system will surely pay as the Peking-Mukden line has proved.

With the Great Eastern Port and the Great Northern Port as termini of this system of railroads, I propose that, besides the existing and projected lines in this region, the following be constructed, all of which shall constitute the Central Railway system.

a. The Great Eastern Port-Tarbogotai line.
b. The Great Eastern Port-Urga line.
c. The Great Eastern Port-Uriasutai line.
d. The Nanking-Loyang line.
e. The Nanking-Hankow line.
f. The Sian-Tatung line.
g. The Sian-Ninghsa line.
h. The Sian-Hankow line.
i. The Sian-Chungking line.
j. The Lanchow-Chungking line.
k. The Ansichow-Iden line.
l. The Chochiang-Koria line.
m. The Great Northern Port-Hami line.
n. The Great Northern Port-Sian line.
o. The Great Northern Port-Hankow line.
p. The Hoangho Port-Hankow line.
q. The Chefoo-Hankow line.
r. The Haichow-Tsinan line.
s. The Haichow-Hankow line.
t. The Haichow-Nanking line.
u. The Sinyangkang-Hankow line.
v. The Luszekang-Nanking line.
w. The Coast line.
x. The Hwoshan-Kashing line.

a. The Great Eastern Port-Tarbogotai line. This line begins at the Great Eastern Port on the seaboard, and runs in a northwesterly direction to Tarbogotai on the Russian frontier, covering a distance of about 3,000 miles. If Shanghai be the Great Eastern Port, the Shanghai-Nanking Railway will form its first section. But if Chapu be chosen, then this line should skirt the Taihu Lake on the southwest through the cities of Huchow, Changhing, Liyang to Nanking, then crossing the Yangtze at a point south of Nanking, to Chiantsiao and Tingyuen. Thence, the line turns westward to Showchow and Yingshang, and enters Honan province at Sintsai. After crossing the Peking-Hankow line at Kioshan, and passing Piyang, Tanghsien, and Tengchow, it turns northwestward to Sichwan and Kingtsekwan, and enters the province of Shensi. Ascending the Tan Kiang Valley, it passes through Lungkucha and Shangchow, and crosses the Tsinling Pass to Lantien and Sian, the capital of Shensi, formerly the capital of China. From Sian, it goes westward, following the valley of the Weiho. It passes through Chowchih, Meihsien, and Paoki and enters the province of Kansu at Sancha, thence proceeding to Tsinchow, Kungchang, Titao, and Lanchow, the capital of Kansu. From Lanchow it follows the old highway which leads into Liangchow, Kanchow, Suchow, Yumen, and Ansichow. Thence it crosses the desert in a northwesterly direction to Hami, where it turns westward to Turfan. At Turfan this line meets the Northwestern Railway System and runs on the latter's track to Urumuchi and Manass where it leaves that track and proceeds northwesterly to Tarbogotai on the frontier, crossing the Shair Mountain on the way. This line runs from one end of the country to the other encountering in its entire length of 3,000 miles only four mountain passes, all of which are not impassable for they have been used from time immemorial, as trade highways of Asia.

b. The Great Eastern Port-Urga line. This line starts from the Great Eastern Port and uses the same track as line (*a*) as

far as Tingyuen, the second city after crossing the Yangtze River at Nanking. From Tingyuen, its own track begins and the line proceeds in a northwesterly direction to Hwaiyuan, on the Hwai River, thence to Mongcheng, Kwoyang, and Pochow. Turning more northward, it crosses the Anhwei border into Honan, and passing through Kweiteh it crosses the Honan border into Shantung. After passing through Tsaohsien, Tingtao, and Tsaochow, it crosses the Hoangho and enters Chihli province. Passing through Kaichow it reënters Honan to Changteh, thence it follows the Tsingchangho Valley, in a northwesterly direction, across the Honan border into Shansi. Here the line enters the northeastern corner of the vast iron and coal field of Shansi. After entering Shansi, the line follows the river valley to Liaochow and Yicheng, and crosses the watershed into the Tungkwoshui Valley to Yutse and Taiyuan. From Taiyuan, it proceeds northwestward through another rich iron and coal field of Shansi to Kolan. Thence, it turns westward to Poate, where it crosses the Hoangho to Fuku, in the northeastern corner of Shensi. From Fuku, the line proceeds northward, cuts through the Great Wall into the Suiyuan District and crosses the Hoangho to Saratsi. From Saratsi, the line runs in a northwesterly direction across the vast prairie to Junction A of the Northwestern Trunk Line, where it joins the common track of the Dolon Nor-Urga line to Urga. This line runs from a thickly populated country at one end in Central China to the vast thinly populated and fertile regions of Central Mongolia, having a distance of about 1,300 miles from Tingyuan to Junction A.

c. The Great Eastern Port-Uriasutai line. Starting from the Great Eastern Port, this line follows line (*a*) as far as Tingyuan, and line (*b*) as far as Pochow. At Pochow, it branches off on its own track and proceeds westward across the border to Luye, in Honan. Thence it turns northwestward to Taikang, Tungsu, and Chungmow where it meets the Hailan line and runs in the same direction with it to Chengchow, Jungyang, and Szeshui. From Szeshui it crosses the Hoanghe to Wenhsien, thence to Hwaiking and over the Honan border into Shansi. It now passes through Yangcheng, Chinshui, and Fowshan to Pingyang where it crosses the Fen River and proceeds to Puhsien and Taning, then westward to the border where it crosses the Hoangho into Shensi. Thence it proceeds to Yenchang, and follows the Yenshui Valley to Yenan, Siaokwan, and Tsingpien. The running along the south side of the Great Wall, it enters Kansu, and crosses the Hoangho to Ninghsia. From Ninghsia, it proceeds northwestward across the Alashan Mountain to Tingyuanying at the edge of the desert. Thence it proceeds in a straight line northwestward to Junction B of the Northwestern Railway System, where it joins that system and runs to Uriasutai. This part of the line passes through desert and grassland both of which could be improved by irrigation. The distance of this line from Pochow to Junction B is 1,800 miles.

d. The Nanking-Loyang line. This line runs between two former capitals of China, passes through a very populous and fertile country, and taps a very rich coal field at the Loyang end. It starts from Nanking, running on the common track of line A and B and branches off at Hwaiyuan westward to Taiho. After passing Taiho, it crosses the Anhwei border into Honan. Thence it runs alongside the left bank of the Tashaho to Chowkiakow, a large commercial town. From Chowkiakow, it proceeds to Linying where it crosses the Peking-Hankow line thence to Hiangcheng and Yuchow where the rich coal field of Honan lies. After Yuchow it crosses the Sungshan watershed to Loyang where it meets the Hailan line running from east to west. This line is about 300 miles from Hwaiyuan to Loyang.

e. The Nanking-Hankow line. This line will run alongside the left bank of the Yangtzekiang, connecting with Kiukiang by a branch line. It starts on the opposite side of Nanking and goes southwest to Hochow, Wuweichow and Anking, the capital of Anhwei province. After Anking, it continues in the same direction to Susung and Hwangmei, where a branch should be projected to Siaochikow, thence across the Yangtzekiang to Kiukiang. After Hwangmei, the line turns westward to Kwangchi, then northwestward to Kishui, and finally westward to Hankow. It covers a distance of about 350 miles through a comparatively level country.

f. Sian-Tatung line. This line starts from Sian and runs northward to Sanyuan, Yaochow, Tungkwan, Yichun, Chungpu, Fuchow, Kanchuan, and Yenan, where it meets the Great Eastern Port-Uriasutai line. From Yenan, it turns northeastward to Suitch, Michih, and Kiaochow on the right bank of the Hoangho. Thence it runs along the same bank to the junction of the Weifen River with the Hoangho (on the opposite side), where it crosses the Hoangho to the Weifen Valley and proceeds to Singhsien and Kolan, there crossing the Great Eastern Port-Urga line. From Kolan, it proceeds to Wuchai and Yangfang, where it crosses the Great Wall to Sochow and then Tatung there meeting the Peking-Suiyuan line. This line is about 600 miles long. It passes through the famous oil field in Shensi, and the northern border of the northwestern Shansi coal field. At Tatung, where it ends, it joins the Peking-Suiyuan line and through the section from Tatung to Kalgan it will connect with the future Northwestern System which will link Kalgan and Dolon Nor together.

g. The Sian-Ninghsia line. This line will start from Sian in a northwesterly direction to Kingyanghsien, Shunhwa, and Sanshui. After Sanshui, it crosses the Shensi border into Kansu at Chengning and then turns west to Ningchow. From Ningchow, it follows the Hwan Valley along the left bank of the river up to Kingyangfu and Hwanhsien, where it leaves the bank and proceeds to Tsingping, and Pingyuan, where it meets the Hwan River again and follows that valley up to the watershed. After crossing the watershed, it proceeds to Lingchow, then across the Hoangho to Ninghsia. This line covers a distance of about 400 miles and passes through a rich mineral and petroleum country.

h. The Sian-Hankow line. This is a very important line connecting the richest portion of the Hoangho Valley with the richest portion of the central of the Yangtze Valley. It starts from Sian on the track of line (*a*), crosses the Tsingling and descends the Tankiang Valley as far as Sichwan at this point, it branches off southward across the border into Hupeh, and following the left bank of the Han River, passes Laohokow to Fencheng, opposite Siangyang. After Fenchang, it follows continuously the same bank of the Han River to Anlu, thence proceeding in a direct line southeastward to Hanchwan and Hankow. This line is about 300 miles long.

i. The Sian-Chungking line. This line starts from Sian almost directly southward, crosses the Tsinling Mountain into the Han Valley, passes through Ningshen, Shihchuan, and Tzeyang, ascends the Jenho Valley across the southern border of Shensi into the province of Szechwan at Tachuho. Then crossing the watershed of the Tapashan into the Tapingho Valley, it follows that valley down to Suiting and Chuhsien. Thence it turns to the left side of the valley to Linshui and follows the trade road to Kiangpeh and Chungking. The entire distance of this line is about 450 miles through a very productive region and rich timber land.

j. The Lanchow-Chungking line. This line starts from Lanchow southwestward and follows the same route as line (a) as far as Titao. Thence, it branches off and ascends the Taoho Valley across the Minshan watershed into the Heishui Valley following it down to Kiaichow and Pikow. After Pikow, it crosses the Kansu border into Szechuan and proceeds to Chaohwa, where the Heishuiho joins the Kialing. From Chaohwa, it follows the course of the Kialing River down to Paoning, Shunking, Hochow, and Chungking. The line is about 600 miles long, running through a very productive and rich mineral land.

k. The Ansichow-Iden line. This line passes through the fertile belt of land between the Gobi Desert and the Altyntagh Mountain. Although this strip of land is well watered by numerous mountain streams yet it is very sparsely populated, owing to the lack of means of communication. When this line is completed, this strip of land will be most valuable to Chinese colonists. The line starts from Ansichow westward to Tunhwang, and skirts the southern edge of the Lobnor Swamp to Chochiang. From Chochiang, it proceeds in the same direction via Cherchen to Iden where it connects with the terminus of the Northwestern System. With this System, it forms a continuous and direct line from the Great Eastern Port to Kashgar at the extreme west end of China. This line from Ansichow to Iden is about 800 miles in length.

l. The Chochiang-Koria Line. This line runs across the desert alongside the lower part of the Tarim River. The land on both sides of the line is well watered and will be valuable for colonization as soon as the railroad is completed. This line is

about 250 miles in length and connects with the line that runs along the northern edge of the desert. It is a short cut between fertile lands on the two sides of the desert.

m. The Great Northern Port-Hami Line. This line runs from the Great Northern Port in a northwesterly direction by way of Paoti and Siangho to Peking. From Peking it runs on the same track with the Peking-Kalgan Railway to Kalgan, where it ascends the Mongolian Plateau. Then it follows the caravan road northwestward to Chintai, Bulutai, Sessy, and Tolubulyk. From Tolubulyk, it takes a straight line westward crossing the prairie and desert of both the Inner and Outer Mongolia to Hami where it connects with the Great Eastern Port-Tarbogotai line which runs almost directly west to Urumuchi, the capital of Sinkiang. Thus, it will be the direct line from Urumuchi to Peking and the Great Northern Port. This line is about 1,500 miles in length, the greater part of which will run through arable land and so when it is completed it will form one of the most valuable railways for colonization.

n. The Great Northern Port-Sian Line. This line will run westward from the Great Northern Port to Tientsin. From here it runs southwestward to Hokien, passing through Tsinghai and Tachen. From Hokien, it runs more westerly to Shentseh, Wuki, and Chengting where it joins the Chengtai line as well as crosses the Kinhan line. From Chengting it takes the same road as the narrow gauge Chengtai line which has to be reconstructed into standard gauge so as to facilitate through trains to Taiyuan and farther on. From Taiyuan it runs southwestward to Kiaocheng, Wenshui, Fenchow, Sichow, and Taning. After Taning it turns westward and crossing the Hoangho, it turns southwestward to Yichwan, Lochwan, and Chungpu where it joins the Sian-Tatung line and runs on the same track to Sian. Its length is about 700 miles over very rich and extensive iron, coal, and petroleum fields, as well as productive agricultural lands.

o. The Great Northern Port-Hankow Line. This line starts from the Great Northern Port skirting the coast to Petang, Taku, and Chikow, thence to Yenshan and crosses the Chihli border into Shantung at Loling. From Loling, it goes to Tehping, Linyi, and Yucheng where it crosses the Tientsin-Pukow line, proceeds to Tungchang and Fanhsien, and then crosses the Hoangho to Tsaochow. After Tsaochow it passes the Shantung border into Honan, crossing the Hailan line to Suichow. From Suichow it proceeds to Taikang where it crosses line (*c*), then to Chenchow and Chowkiakow where it crosses line (*d*) and thence to Siangcheng, Sintsai, Kwangchow, and Kwangshan. After Kwangshan it crosses the boundary mountain into Hupeh, passing through Hwangan to Hankow. This line is about 700 miles long, running from the Great Northern Port to the commercial centre of central China.

p. The Hoangho Port-Hankow Line. This line starts from the Hoangho Port in a southwesterly direction to Pohsing, Sincheng, Changshan, then across Kiauchow-Tsinan line to Poshan. Thence it ascends the watershed into the Wen Valley to Taian where it crosses the Tientsin-Pukow line to Mingyang and Tsining. From Tsining it proceeds in a straight line southwestward to Pochow in Anhwei, and Sintsai in Honan. At Sintsai it joins the Great Northern Port-Hankow line to Hankow. The distance of this line from the Hoangho Port to Sintsai is about 400 miles.

q. The Chefoo-Hankow Line. This line starts at Chefoo on the northern side of the Shantung Peninsula and crosses that Peninsula to Tsimo, on the southern side, via Laiyang and Kinkiakow. From Tsimo it proceeds southwestward across the shallow mud flat at the head of Kiauchow Bay in a straight line to Chucheng. After Chucheng it crosses the watershed into the Shuho Valley to Chuchow and Ichow, then proceeds to Hsuchow where it meets the Tientsin-Pukow line and the Hailan line. From Hsuchow it runs on the same track with the Tientsin-Pukow line as far as Suchow in Anhwei, then branches off to Mengcheng and Yinchow, and crosses the border into Honan at Kwangchow, where it meets the Great Northern Port-Hankow line and proceeds together to Hankow. This line from Chefoo to Kwangchow is about 550 miles in length.

r. The Haichow-Tsinan line starts from Haichow following the Linhung River to Kwantunpu then turns westward to Yichow. From Yichow it turns first northward then northwestward passing by Mongyin, Sintai to Taian. At Taian it joins the Tsinpu line and proceeds in the same line to Tsinan. This line covers, from Haichow to Tsinan, a distance about 110 miles, tapping the coal and iron fields of Southern Shantung.

s. The Haichow-Hankow Line. This line starts at Haichow in a southwesterly direction, goes to Shuyang and Sutsien, probably in the same route as the projected Hailan line. From Sutsien it proceeds to Szechow and Hwaiyuan, where it crosses the Great Eastern Port Urga and Uriasutai lines. After Hwaiyuan it goes to Showchow and Chenyangkwan, thence continuing in the same direction across the southeastern corner of Honan and the boundary mountain into Hupeh, proceeds to Macheng and Hankow, covering a distance of about 400 miles.

t. The Haichow-Nanking Line. This line goes from Haichow southward to Antung, then inclining a little south to Hwaian. After Hwaian it crosses the Paoying Lake (which will be reclaimed according to the regulation of the Hwaiho in Part IV, Program II) to Tienchang and Luho, thence to Nanking. Distance, about 180 miles.

u. The Sinyangkang-Hankow Line. This line starts from Sinyangkang to Yencheng, then crossing the Tasung Lake (which will be reclaimed) to Hwaian. From Hwaian it turns southwestward passing over the southeastern corner of the Hungtse Lake (which will also be reclaimed) to Suyi, in Anhwei. After Suyi, it crosses the Tientsin-Pukow line near Mingkwang, to Ting Yuan, where it meets the lines (*b*) and (*c*). After Tingyuan, it proceeds to Lu-an and Hwoshan, then crosses the boundary mountain into Hupeh passing through Lotien to Hankow, a distance of about 420 miles.

v. The Luszekan-Nanking Line. This line starts at Luszekan, a fishing harbor to be constructed at the extremity of the northern point of the Yangtze Estuary. From Luszekan it proceeds westward to Tungchow where it turns northwestward to Jukao, and then westward to Taichow, Yangchow, Luho, and Nanking. This line is about 200 miles long.

w. The Coast Line. This line starts at the Great Northern Port, and follows the Great Northern Port-Hankow line as far as Chikow, where it begins its own line. Keeping along the coast, it crosses the Chihli border to the Hoangho Port, in Shantung, then proceeds to Laichow where it takes a straight cut away from the coast to Chaoyuan and Chefoo, thus avoiding the projected Chefoo-Weihsien line. From Chefoo it proceeds southeastward through Ninghai to Wenteng, where one branch runs to Jungcheng and another to Shihtao. The main line turns southwestward to Haiyang and Kinkiakow, where it joins the Chefoo-Hankow line, and follows it as far as the western side of Kiauchow Bay, thence southward to Lingshanwei. From Lingshanwei the line proceeds southwestward along the coast to Jichao, and crosses the Shantung border into Kiangsu, passing Kanyu to Haichow. Thence it proceeds southeastward to Yencheng, Tungtai, Tungchow, Haimen, and Tsungming Island which will be connected with the mainland by the regulation works of Yangtze embankment. From Tsungming trains can be ferried over to Shanghai. This line from Chikow to Tsungming is about 1,000 miles in length.

x. The Hwoshan-Wuhu-Soochow-Kashing Line. This line starts from Hwoshan to Shucheng and Wuwei, then across the Yangtzekiang to Wuhu after passing through Kaoshun, Liyang, and Ihing, it crosses over the northern end of Taihu (which will be reclaimed) to Soochow, where it meets the Shanghai-Nanking line. From Soochow it turns southward to Kashing on the Shanghai-Hangchow line. This line runs over very populous and rich districts of Anhwei and Kiangsu provinces, covering a distance of about 300 miles, which will form the greater part of the shortest line from Shanghai to Hankow.

Part II.—The Southeastern Railway System

This system covers the irregular triangle which is formed by the Coast line between teh Great Eastern and the Great Southern Ports, as the base, by the Yangtze River from Chungking to Shanghai, as one side, and by line (*a*) of the Canton-Chungking Railway as the other side, with Chungking as the apex. This triangle comprises the provinces of Chekiang, Fukien, and Kiangsi, and a part respectively of Kiangsu, Anhwei, Hupeh,

Hunan, and Kwangtung. This region is very rich in mineral and agricultural products, especially iron and coal deposits which are found everywhere. And the whole region is thickly populated. So railway construction will be very remunerative.

With the Great Eastern Port and the Great Southern Port and the second- and third-class ports that lie between the two as termini of this system of railroads, I propose that the following lines be constructed:

a. The Great Eastern Port-Chungking Line.
b. The Great Eastern Port-Canton Line.
c. The Foochow-Chinkiang Line.
d. The Foochow-Wuchang Line.
e. The Foochow-Kweilin Line.
f. The Wenchow-Shenchow Line.
g. The Amoy-Kienchang Line.
h. The Amoy-Canton Line.
i. The Swatow-Changteh Line.
j. The Nanking-Siuchow Line.
k. The Nanking-Kaying Line.
l. The Coast Line between the Great Eastern and the Great Southern Ports.
m. The Kienchang-Yuanchow Line.

a. The Great Eastern Port-Chungking Line. This line connects the commercial centre of western China—Chungking—with the Great Eastern Port in almost a straight route south of the Yangtze River. It starts from the Great Eastern Port and goes to Hangchow, then through Linan, Changhwa, to Hweichow, in Anhwei. From Hweichow it proceeds to Siuning and Kimen, then crosses the border into Kiangsi and passing Hukow reaches Kiukiang. From Kiukiang it follows the right bank of the Yangtze, crosses the Hupeh border to Hingkwochow and then proceeds to Tungshan and Tsungyang, where it passes over the border to Yochow in Hunan. From Yochow it takes a straight line across the Tungting Lake (which will be reclaimed) to Changteh. From Changteh it proceeds up the Liu Shui Valley, passing through Tzeli, and crossing the Hunan border to Hofeng, in Hupeh and then to Shinan and Lichwan. At Shinan a branch should be projected northeastward to Ichang, and at Lichwan another branch should be projected northwestward to Wanhsien, both on the left side of the Yangtze River. After Lichwan it crosses the Hupeh border into Szechuan, passing Shihchu to Fowchow, then passes the Wukiang and proceeds along the right side of the Yangtze River as far as (*a*) and (*b*) line of the Canton-Chungking Railway and then crosses together on the same bridge to Chungking on the other side of the river. The length of this line including branches, is about 1,200 miles.

b. The Great Eastern Port-Canton Line. This is a straight line from one first-class seaport to another. It starts from the Great Eastern Port and goes to Hangchow, then turning southwestward, follows the left bank of the Tsien Tang River through Fuyang, Tunglu to Yenchow and Chuchow. Then it proceeds across the Chekiang-Kiangsi border to Kwangsin. Form Kwangsin it goes through Shangtsing and Kinki to Kienchang, then proceeds to Nanfeng, Kwangchang, and Ningtu. After Ningtu it proceeds to Yutu, Sinfeng, Lungnan, and crossing the boundary mountain of Kiangsi and Kwangtung, to Changning. Thence via Tsungfa it goes to Canton, covering a distance of about 900 miles.

c. The Foochow-Chinkiang Line. This line starts from Foochow, goes by way of Loyuan and Ningteh to Fuan, and then proceeds across the Fukien-Chekiang border to Taishun, Kingning, Yunho, and Chuchow. Thence it proceeds to Wuyi, Yiwu, Chukih, and Hangchow. After Hangchow it goes to Tehtsing and Huchow and then crosses the Chekiang border into Kiangsu. Then it proceeds by way of Ihing, Kintan, and Tanyang to Chinkiang. This line is about 550 miles in length.

d. The Foochow-Wuchang Line. This line starts from Foochow and following the left bank of the Min River and passing Shuikow and Yenping reaches Shaowu. After Shaowu, it proceeds across the Fukien border into Kiangsi and then passes through Kienchang and Fuchow to Nanchang, the capital of Kiangsi. From Nanchang it proceeds to Hingkwo, in Hupeh, and passes on to Wuchang, the capital of Hupeh. It covers a distance of about 550 miles.

e. The Foochow-Kweilin Line. This line starts from Foochow, crosses the Min River and proceeds by way of Yungfu, Tatien, Mingyang, and Liencheng to Tingchow. Thence it crosses the Fukien-Kiangsi border to Shuikin. From Shuikin it proceeds to Yutu and Kanchow and then to Shangyin and Chungyi. After Chungyi it crosses the Kiangsi-Hunan border to Kweiyanghsien and Chenchow, where it crosses the Canton-Hankow line to Kweiyangchow. Thence it continues to Sintien, Ningyuan, and Taochow, where it meets lines (*a*) and (*b*) of the Canton-Chungking Railway. After Taochow it turns southward following the Tacho Valley to the Kwangsi border and then crossing it, proceeds to Kweilin. This line covers a distance of about 750 miles.

f. The Wenchow-Shenchow Line. This line begins from the new Wenchow Port and follows the left bank of the Wukiang as far as Tsingtien. From Tsingtien it proceeds to Chuchow and Suenping and turning westward across the Chekiang border to Yushan in Kiangsi. After Yushan it goes to Tehsing, Loping, and then skirting the southern shore of Poyang Lake goes through Yukan to Nanchang, the capital of Kiangsi. From Nanchang it proceeds to Juichow, Shangkao, and Wantsai, then crosses the Kiangsi border to Liuyang in Hunan, and Changsha, the capital of Hunan. After Changsha it goes to Ningsiang, Anhwa, and Shenchow where it connects with line (*a*) of the Canton-Chungking Railway, and with the Shasi-Singyi line. This line covers a distance of aobut 850 miles.

g. The Amoy-Kienchang Line. This line starts from the new port of Amoy and goes to Changtai, then following the Kiulungkiang to Changping, Ningyang, Tsingliu, and Kienning. After Kienning it proceeds across the Kiangsi border to Kienchang, where it connects with the Great Eastern Port-Canton line, the Foochow-Wuchang line, and the Kienchang-Yuanchow line. This line covers a distance of about 550 miles.

h. The Amoy-Canton Line. This line starts at the new port of Amoy, and proceeds to Changchow, Nantsing, and Siayang, where it crosses the Fukien border to Tapu, in Kwangtung. From Tapu it goes to Tsungkow, Kaying, Hinning, and Wuhwa. After Wuhwa it crosses the watershed between the Hankiang and the Tungkiang rivers to Lungchün, then following the Tungkiang down to Hoyun, after that it crosses another watershed to Lungmoon, Tsengshin, and Canton. This line covers a distance of about 400 miles.

i. The Swatow-Changteh Line. This line starts from Swatow, proceeds to Chaochow, Kaying, and then crosses the Kwangtung border to Changning in Kiangsi. From Changning it crosses the watershed into Kungkiang Valley and follows that river down to Hweichang and Kanchow. From Kanchow it proceeds to Lungchuan, Yungning, and Lienhwa, where it crosses the Kiangsi border into Hunan. After that, it proceeds to Chuchow and Changsha, the capital of Hunan. From Changsha it goes to Ningsiang, Yiyang, and Changteh where it ends, connecting with the Great Eastern Port-Chungking line, and the Shasi-Singyi line This line covers a distance of about 650 miles.

j. The Nanking-Siuchow Line. This line starts from Nanking and runs along the right bank of the Yangtze to Taiping, Wuhu, Tungling, Chichow, and Tungliu. After Tungliu it passes over the Anhwei border into Kiangsi, at Pengtseh, and goes to Hukow. At Hukow it meets the Gerat Eastern Port-Chungking line and crosses the bridge together with that line to the projected Poyang Port. From the Poyang Port it runs along the west shore of the Poyang Lake through Nanking and Wucheng to Nanchang, and where it meets the Wenchow-Shenchow and Foochow-Wuchang lines. From Nanchang it proceeds up the Kan Kiang Valley, via Linkiang to Kian, where it crosses the projected Kienchang-Yuanchow line. After Kian, it proceeds to Kanchow where it crosses the Foochow-Kweilin line. Thence it goes to Nankanghsien and Nanan. After Nanan it crosses the boundary mountain, Tayuling, into Kwangtung at Nanyung, thence passes through Chihing to Siuchow, where it meets the Canton-Hankow line. This line covers a distance of about 800 miles.

(To be continued in November issue.)

Engineering, Financial, Industrial and Commercial News

RAILWAYS, NEW LINES, SUPPLIES, ETC

West China Railway Projects.—The Peking Official Gazette says that Yeh Kung-cho, the minister of communications, has instructed the Chinese director of the Canton-Hankow-Szechuan Railway to consider and report as to whether the Sinyangchow-Chengtu and Tatungfu-Chengtu lines should be joined up with the Hankow-Szechuan line.

The Gazette adds: "The Canton-Hankow-Szechuan Railway is the most important of the southwestern lines and, as Chinese industry depends on railway communications for development, it is most regrettable that this line has not been completed. The great war prevented the flotation of bonds but the war is now ended and the line must be completed. If the international banking group cannot carry out its original obligation, other means must be found, for further postponement would be most injurious to Chinese interests."

Chinese Railway Standardization.—The third session of the commission of Chinese and foreign engineers considering plans for the standardization of Chinese government railways was held in Peking, September 13-17. Agreement was reached covering the adoption of the metric system, specifications for a standard gauge, clearance, measurements and weights for cars, brakes, couplings and curves of permanent way and some of the requirements for locomotives.

Chinese Railway Costs and Accounts.—The following is the text of a recent statement by the Chinese minister of communications, Mr. Yeh Kung-cho:—"Most of the railways of China have been constructed by foreign loans and the expenditures and receipts are naturally enormous. In order to establish confidence along this branch of development, it is necessary that the accounts be strictly watched. During the eight years of the Republic of China, the investment in railways is estimated at approximately $420,000,000, up to the end of the 8th year; the receipts are estimated at approximately $83,000.000, and the expenditures at approximately $38,000,000. Considering that the amount of expenditure is so enormous, any discrepancy or any error in the accounting departments would reflect on the bookkeeping system. In view of the importance of this line of work, the present minister, who was director of the Bureau of Railways in the 2nd year of the Republic of China, organized a railway commission, and Chinese and foreign accountants and experts were employed in that commission, with the object of adopting systems as were then existing in Europe and America, for the purpose of unifying the accounting in all the railways in the country. In June of the 4th year of the Republic the first report was issued and published for the information of both the Chinese and foreign public. The results at that time were highly satisfactory to both Chinese and foreigners. Many years have since passed and it is felt that the accounting systems installed at that time may not be kept up to date. It is hereby ordered that all railway directors, chiefs of departments and other employees observe the rules and regulations with respect to economy in the administration of the accounts, and that all receipts and expenditures be accounted for strictly so as to preserve China's credit both at home and abroad."

New Central Station, Peking.—Mr. Yeh Kung-cho is resolved to carry out his old scheme of constructing a Central Station at Peking for the Peking-Mukden, the Peking-Hankow and the Peking-Suiyang railways, and has instructed the Vice-Minister and the Chief of the Railway Department to furnish plans for carrying out a survey as soon as possible.

Yeh Kung-cho has also instructed his subordinates to provide plans of estimates for a new bridge across the Yellow River on the Peihan line.

Peking-Suiyuan R. R. Extension.—The Railway Board has decided to build an extension to the Suiyuan railway and is raising funds by means of domestic bonds, and not by seeking a foreign loan as reported.

Kowloon-Canton Earnings.—During 1919, the gross earnings of the Kowloon-Canton Railway were $490,092.77, the expenditure $417,032.14, and the net revenue, $73,060.63.

Nationalization of Dai Nippon Tramway.—The Japanese Railway Department has completed the purchase of the Atami-Odawara tramway paralelling the new Atami section of the government railway under construction. The sum of Y.800,000 was paid for the line and rolling stock.

New Freight Station, Singapore.—The Federated Malay States government has approved of a grant of $95,000 for the purchase from the Singapore Harbor Board by the Federated Malay States Railway of a tract of land for the purpose of extending the freight station at Tanjong Pagar railway station, Singapore.

New Japanese Railway Equipment.—The Railway Department has obtained a credit of Y.45,000,000 for new rolling stock which will be expended in the construction of 190 locomotives, 457 passenger cars, 50 electric and 1,528 freight cars.

Locomotive Construction, Japan.—The Matsukasado Dockyard located at Yamaguchi-ken, one of the Kuhara enterprises will commence the manufacture of locomotives. It is expected that twelve engines will be turned out in the course of the first year. Hitherto only the Kawasaki Dockyard and the Osaka company have engaged in private locomotive construction in Japan, and the new venture is being followed with interest.

Chosen Central Railway Bonds.—The shareholders of this company have approved the flotation of a bond issue of Y.3,500,000 on the security of the physical properties of the line, in order to raise capital to proceed with.

Narita Railway Nationalized, Japan.—The Narita railroad, owned by the Narita Railroad Company, founded over ten years ago, was nationalized on August 31. The Narita-Sakura line business of the company will be handed over to the Railway Department.

Elevation of Railway, Kobe.—It is proposed by the railway authorities to elevate the main line in the city of Kobe for which between Y.20,000,000 and Y.30,000,000 will be required.

Tientsin - Pukow Railway. — The Tientsin-Pukow Railway will construct a train ferry at Pukow, the cost of the project, including railway approaches, is estimated at $3,500,000.

Railway Construction in Johore, Malay Peninsula.—Upon completion of the railways now being constructed in Johore, Malay Peninsula, surprising results in the industrial progress may be looked for, advices Consul-General Edwin N. Gunsaulus, Singapore, Straits Settlements. The road from Kluang to Mersing, which will probably be completed next year, will open up communication with the east coast and the mining districts of Jamaluang and Mersing, while the completion of the roads on the west coast will do much to develop the country west of the railway.

American Locomotives for China.—An American firm built 62 locomotives for shipment to China last year. Among the purchasers were the Hupeh Government Mining Bureau, the Canton-Samshui Railway, the Peking-Hankow Railway and the Peking-Mukden Railway. Another American firm is reported to have closed contracts for 20 Mikado type freight locomotives for use on the Tientsin-Pukow Railway.—*Finance and Commerce.*

Korean Railway Extensions.—Figures up to December 31, 1919, show a total railway mileage of 1,153 miles. During December three new sections of the Korean railways were opened: from Genzan-Kanko, a distance of 64 miles; from Seishin to Ranam, a distance of 5 miles; and from Seishin to Kwainei, a distance of 36 miles, which open up territory in the northern part of the peninsula which has up to this time been very inacessible and should make for additional activity in that region. The year 1919 witnessed a great interest in the matter of light railways and a number of new private companies were organized, so that during the year the aggregate mileage of lines sanctioned by the government reached 1,085 miles and the end of the year saw lines extending over 1,500 miles in length in course of construction.

The Shimonoseki Tunnel.—According to the *Asahi* the scheme of laying a tube under the Shimonoseki Straits is making progress. The journal reports that the work will be commenced from November next. It is also reported that several English, American and French experts have applied through their Embassies to be allowed to contract for the work.

In connection with this Mr. K. Hirai, the head expert for the undertaking, is quoted by the journal as stating that the work may be done without foreign aid, though it is the first work of the kind done in Japan. The tube will be laid by the ordinary means employed in such constructions, some 100 feet below the surface. The sections will be 22 feet in diameter and 2 feet in length and it is calculated that some 13,200 sections will be required to cover the distance.

S.M.R. Extensions.—The *Asahi* quotes Mr. R. Nomura, the President of the South Manchuria

Railway, as stating that the increase of Y.440,000,000 in the capital of the company will be taken up equally by the government and the public. It solely depends upon the resolution of the general meeting in what form the government will make investment, and whether it will give shares in the Korean Railway or other certificates of payment. As to the general undertakings in this financial year, the prolongation of the lines will be put under construction before long with a budget allotment of Y.6,000,000, an understanding with the Chinese government having already been come to. The extension on the Dairen pier is almost completed and this will be followed by another extension shortly, while the cable between Dairen and Nagasaki, materials of which have been ordered in England, will be laid at a budgetted cost of Y.2,000,000.

The Tractor Train as a Freight Carrier.—*Holland's East India* describes the construction of a tractor train and its use as a freight carrier in Java. Plans are under way for the establishment of a tractor-train service from and to Soerabaya Harbor. The tractor train consists of a motor engine, the bearing power of which has been converted into hauling power by an ingeniously constructed spring arrangement on the double rear axle to the seat of the motor driver. Immediately appended to same is a two-wheeled trailer, which follows closely all the movements of the tractor, being attached by a movable roller connection on a large round sheave on the top of the double rear axle. Every detail of its construction has been so worked out that a tractor train of six trailers can carry a large amount of tonnage at a great saving of street space.

ELECTRIC LIGHTING, TRACTION, POWER, ETC.

Vladivostok Tramways.—The need for money in Vladivostok is so great that the local government has decided to sell the right of running the tramways in the city, the electric trains and the lighting to private enterprises. The measure is very unpopular and would never have been even thought of by government in the past. It is stated that Mr. Kogan of Vladivostok, and the Mitsubishi firm are bidding for the concession of running the electric conveyances. The Mitsubishi firm has, it is said, received the approval of the Japanese government to embark on the scheme, and has already sent its representatives to Vladivostok.

Huge Hydro-Electric Combine, Japan.—The Nippon Water Power Company, the Osaka Power Transmission Company and the Kiso Electric Company, the three leading power companies in Osaka has at last reached an understanding for the purpose of amalgamating. The Nippon Water Power Company will deliver 144,000 shares to the Kiso Company, while the Osaka Power Transmission will join unconditionally. The Kiso Company will also obtain 228,000 shares in the new company. As soon as the preliminary arrangements are carried out a new company will be organized and capitalized at Y.100,000,000. This deal was carried through by Mr. Kunisuke Ogazaki of the Seiyukai political party, who will select all directors and auditors. The president will be nominated by the Kiso Company, and the vice-president and one managing director by the Nippon Water Power Company. The Osaka Company rejected the Municipality's offer to purchase its plant and business and will improve its financial condition by the increase of its authorized capital. It is proposed that the combined companies amalgamate two other power companies, the Hakusan Water Power Company and the Japan Electric Power Company, which will be the complete merger of big power supply companies in the Western part of the main island of Japan, to be capitalized at Y.100,000,000.

Hydro-Electric Company Dissolves. — The Hokkaido Water Power Company, recently promoted with the payment of the first instalment on its stock capital, has decided to terminate its affairs and pay back the stock capital.

Hydro-Electric Power for Korea.—A hydro-electric power plant on a large scale with the object of utilizing the waters of the River Hwangsu-won, a tributary of the River Yalu in South Hamkyeng (Kankyo) Province, is planned by the Oriental Development Company. The capital to be raised will be Y.10,000,000. The Province of South Hamkyeng is rich in timber and minerals, and it is anticipated that there will be a large demand for electric power. It is calculated that the installation will take three years. The principal items of expenditure will be the power station, Y.3,153,850; power transmission plant, Y.975,000, and power distribution plant, Y.366,435.

Hydro-Electric Development in Ceylon.—The Public Works Department, Ceylon, is again investigating the island's hydro-electric resources, which was delayed by the war, and it is expected arrangements will proceed rapidly for the early initiation of the proposed electrification of the island's industries and the partial transformation of the transportation systems from steam to electricity, including the extension and development of the use of electricity for domestic purposes in Colombo and other centres of population. Although the standard American frequency of 60 cycles has been prevalently employed in eastern countries during recent years, the electrical adviser to the government of India, who was lent to the government of Ceylon to study the above projects, strongly recommends the British standard of 50 cycles, and states in his report that it is confidently anticipated that the consulting engineers employed to draw up the specifications will be able to place the order for the equipment within the British Empire.

Osaka Tramway Loan.—The Electric Railway Department of the Osaka Municipal government is desirous of raising funds for repairs and extensions and has opened negotiations with the seven principal banks in Osaka for a loan of Y.10,000,000 with interest at 9 per cent. per annum, bonds to be redeemed by drawing within seven years.

Tramway Extension, Japan.—The Tamagawa Electric Railway Company has been granted permission to build a new section between Tamagawa-mura and Kinuta-mura, villages on the Tama River near Tokyo.

New Electric Tramway, Japan.—The Kanaiwa Electric Tramway Company has been granted a charter by the Railway Department for the construction of an electric tramway between Ono and Kanaiwa, Ishikawa Prefecture.

Fukui-Takefu, Mito-Isohama Tramway, Japan.—The Railway Department has granted charters to the Fukutake Electric Tramway Company for the construction of a line 11.60 miles in length between the city of Fukui and Takefu, and to the Mito Kaihin Electric Tramway Company for the construction of a line between the city of Mito and Isohama.

Nagoya-Seto Tramway, Japan.—The Seto Electric Railway Company has been granted a charter for the construction of a line between Nagoya and Seto, an important porcelain centre. The line is to be 13 miles long.

Nagasaki-Motegi Railway, Japan.—The Motegi Automotive Railway Company has been granted a charter for a line between Nagasaki and Motegei, a distance of 4.08 miles.

Toshin Electric Bonds.—The Toshin Electric Power Company has issued new debentures to the amount of Y.1,500,000, secured by mortgage on the company's plants, through the Industrial Bank of Japan. The net price is 97, interest 8 per cent. per annum. Refund within two years beginning after a year from the date of issue.

Tokyo Tramway Appropriation.—The Tokyo Municipal Council approved, on September 8, the estimates calling for the expenditure of Y.144,000,000 for the improvement of the tramway service. It is intended to issue a series of municipal loans to this amount and spread the expenditure over a period of six years. The system is to be extended 50 miles and 1,200 bogie type cars are to be acquired. The features of the plan are the extension of the tracks by some 54 miles; reconstruction of tracks and bridges; and the construction of new cars and the repair of old cars and buildings.

Electrical Amalgamation, Japan.—The Fuji Electric Company, which has been steadily extending its holdings through the amalgamation of smaller concerns in Kanagawa and Shidzuoka prefectures, has increased its capital to Y.20,000,000 in order to take over the properties of the Hokkaido Electric Company and the Hokkaido Water Power Company, both located in the northern island of Hokkaido.

S. M. R. Electric Service for Mukden.—The South Manchurian Railway Company will ask for an appropriation of Y.330,000 in the next budget to supply electricity to Mukden from Fushun.

It was recently proposed to build an electric railway in Mukden, but the scheme miscarried owing to inability to reach an agreement satisfactory to the local Chinese authorities. The present plan is to supply electricity to Mukden from the Fushun coal mines to enhance the prosperity of the city, preliminary to the building of an electric railway.

WATERWORKS AND IRRIGATION

Waterworks, Bombay.—Plans are being completed by the Municipal Commissioner of Bombay to bring into the city from Tansa Lake an additional 50,000,000 gallons of water per day to meet the growing demand for water, which scheme is estimated to cost 40,000,000 rupees ($12,977,300 at normal exchange) distributed over a period of five years.

BUILDINGS

New Building Law, Japan.—As a part of the general awakening to the need for better and more artistic buildings, the Home Office has drafted new regulations for the purpose of officially supervising all new construction in the capital. The regulations will be extended to Osaka, Nagoya, Yokohama and Kobe, and afterwards to all other parts of the empire. To conform to the new regulations many buildings on the main streets of Tokio and the other principal cities will have to be rebuilt, especially those of wood which constitute a grave fire menace to the rest of the city. The regulations will cover the style of architecture, general appearance and height of buildings, sanitary appliances, etc., and will require a special inspection bureau for their enforcement.

New Freight Station at Singapore.—Owing to the increase of freight traffic, the Federated Malay

The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XVI SHANGHAI, NOVEMBER, 1920 No. 11

DAYLIGHT IN MANCHURIA

American Machinery, Materials and Methods Have Made Possible the Remarkable Transformation of the Former Stagnant Manchu Homeland Into the Most Prosperous and Progressive Region in Eastern Asia.

By George Bronson Rea

"WE ARE NOW PURCHASING OVER $15,000,000 A YEAR IN AMERICAN PRODUCTS, AND EXPECT TO INCREASE THIS IN THE FUTURE"—DR. R. NOMURA, PRESIDENT OF THE SOUTH MANCHURIA RAILWAY COMPANY.

DR. R. Nomura's statement carries a message that all thoughtful Americans should try to understand. Let us therefore analyze what Dr. Nomura has to say; try to grasp what his statement means in terms of China's railway development, its bearing on American trade in China and the much-discussed Open Door, and its influence upon those American manufacturers who have been outspoken in their desire for a more harmonious understanding with Japan, rather crudely expressed in the much criticized phrase, "co-operation." Before the war, the average cost of constructing railways in China was about $50,000 gold per mile. China now has 3,700 miles of state railways in operation, and, with the exception of three minor lines, all constructed from the proceeds of foreign loans. These lines are given below with their cost and the country furnishing the loan: Peking-Hankow, $100,298,991.30, Belgium; Peking-Mukden, $60,467,576.91, Great Britain; Tientsin-Pukow, $99,803,208.27, Great Britain and Germany; Shanghai-Nanking, $30,484,417.10, Great Britain; Shanghai-Hangchow-Ningpo, $21,307,376.10, Great Britain; Peking-Suiyuan, $26,100,381.72, Chinese; Cheng-Tai, $21,987,806.07, Franco-Russian; Tao-Ching, $7,286,507.07, Great Britain; Peinlo, $13,396,160.20, Belgium; Kirin-Changchun, $6,542,631.23, Japan; Chichow-Pinghsiang, $49,808,850.27, Chinese (this total includes the Pinghsiang Colleries valued at $45,000,000); Canton-Kowloon, $15,520,617.81, Great Britain; Canton-Samshui, $3,306,240.10, American-Redeemed; Changchow-Amoy, $2,643,031.27, Chinese. Total Valuation, $413,953,795.42.

DR. RYUTARO NOMURA

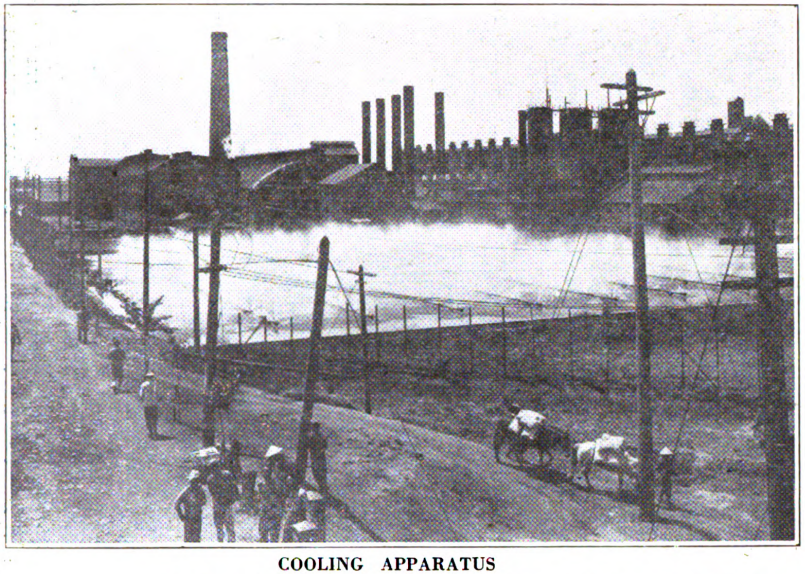
PRESIDENT OF THE SOUTH MANCHURIA RAILWAY COMPANY

A Type of Japan's Modern Captain of Industry, who Successfully Directs the Great Railway and Industrial Enterprises in Manchuria Capitalized at $200,000,000, and Valued at $700,000,000. Dr. Nomura is a self-made man, who has worked his way up from the lowest rungs of the engineering ladder to the most important railway position in Asia. Since 1896, he has been connected with the Imperial Government Railway administration of Japan, serving as Chief Engineer and Vice-Minister.

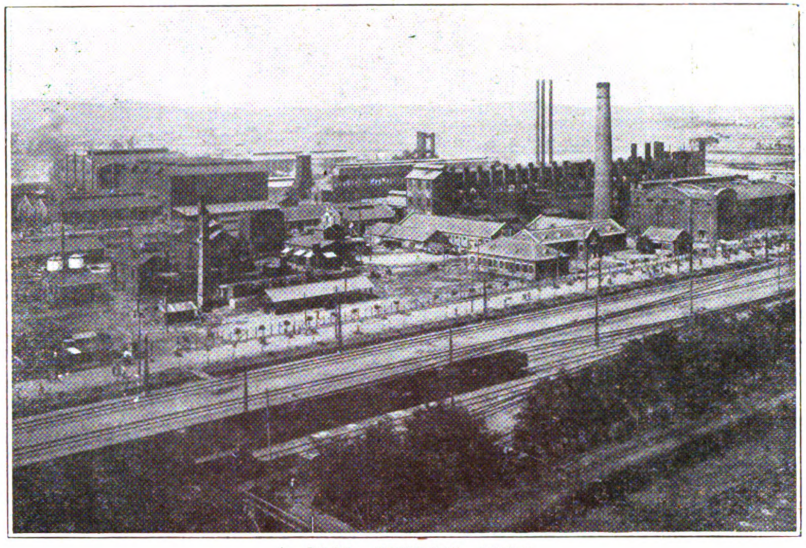
From this total, the lines built by purely Chinese capital may be deducted, viz.: Peking-Suiyuan, $26,100,381; Chuchow-Pinghsiang, $49,808,850 (including valuation of coal mines) and the Changchow-Amoy, $2,643,031, a total of $78,552,262. Deducting this from the total valuation and capitalization of the government system, it leaves $335,401,533, as the total of foreign capital invested in these loan-built lines. At the time these loans were issued, the silver exchange was very low, averaging $2.50 to the Gold dollar, which gives us a rough gold valuation of the loan-built lines, of $135,000,000.

The actual construction cost of these government lines is given at $366,111,303, and, after deducting the costs of the Peking-Suiyuan, Chuchow-Pinghsiang and the Changchow-Amoy lines, ($32,244,995) we get $333,856,408 as the cost for constructing the entire system of Chinese loan-built lines, which, at the same rate of exchange, is equivalent to $133,500,000 gold. It can be fairly estimated that fifty per cent. of the loan total was expended in the purchase of materials in the countries supplying the funds, or about $67,000,000. This, therefore, would roughly represent the value of the Chinese railway market for construction and maintenance materials up to December, 1918.

THE FUSHUN COLLIERY OPERATED BY THE SOUTH MANCHURIA RAILWAY

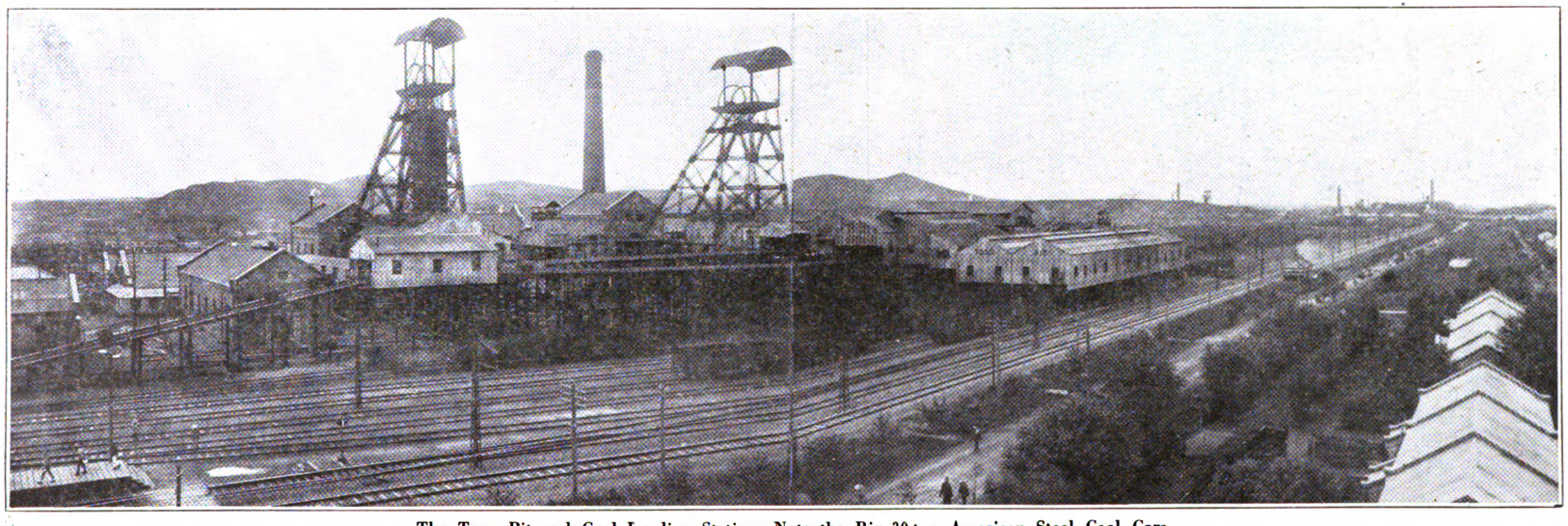


COOLING APPARATUS



A GOOD GENERAL VIEW

The Great Mond Gas Producing Plant—One of the Largest Installations of its kind in the World—Operated by the Fushun Coal Mining Department of the South Manchuria Railway Company



The Togo Pit and Coal Loading Station—Note the Big 30-ton American Steel Coal Cars

On none of these loan-built railways was American material permitted to compete, except in very rare and insignificant cases. It may be added, however, that the purely Chinese financed railways, such as the Peking-Suiyuan, Chuchow-Pinghsiang and the Changchow-Amoy, bought at least half their requirements in America. They represent a capitalization of $15,000,000 gold, of which $9,000,000 went for materials, and about half, or $4,500,000, to American manufacturers. For the purpose of this argument, it may be accepted that American manufacturers furnished materials to the extent of double this amount to the various Chinese railways during the past fifteen years, a conservative statement of the situation existing up to the outbreak of the war. This total has been materially increased during the past three years, due entirely to the inability of the European nations who supplied the loans to fill the orders for materials. This situation is, however, abnormal. As these nations recover their economic position, the provisions of the various loan agreements will again prevail, and China will have to purchase her railway requirements for these lines during the unexpired life of the contracts in the countries which furnished the loans. The Door that was opened to American manufacturers by reason of the war, will automatically close, and the market for railway materials be restricted to the three purely Chinese lines, none of which are free agents for the placing of orders.

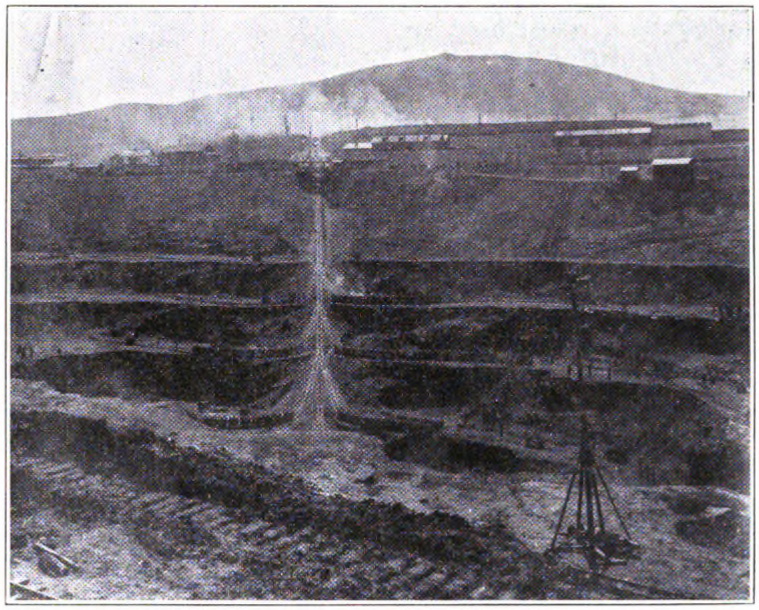
When I read the statement of Dr. Nomura (published in a special number of the *Yomiuri*, of Tokyo) that his company was purchasing over $15,000,000 gold a year of American products, I realized that this was equivalent to a Chinese railway loan of $30,000,000, and if it had extended over a period of ten years, the total would be $150,000,000; which, translated into loan terms, meant an investment equal to $300,000,000 of American money in Chinese railways, or double the entire valuation of the Chinese government railways system. To make certain of this statement, I requested Mr. Inouye, the Governor of the Bank of Japan, to obtain from the railway company the exact official figures of the amounts expended for American materials since the line came into the possession of Japan. The following official report has been compiled from the books of the South Manchuria Railway Company and forwarded through the Governor of the Bank of Japan for the purposes of this article:

VALUE OF PURCHASES OF MATERIAL MADE BY SOUTH MANCHURIA RAILWAY. 1907/8 UNTIL AUGUST 1, 1920.

Administrative Year	Material imported direct from the U. S.	Total of Material bought by the Company.	Percentage of direct imports from the U. S.
	Yen	Yen	%
1907/8	18,917,580.93	28,430,902.82	67
1908/9	959,321.17	6,350,381.10	15
1909/10	642,723.57	12,995,215.52	5
1910/11	582,815.38	11,749,425.44	5

VALUE OF PURCHASES OF MATERIAL MADE BY SOUTH MANCHURIA RAILWAY. 1907/8 UNTIL AUGUST 1, 1920.

Administrative Year	Material imported direct from the U. S.	Total of Material bought by the Company.	Percentage of direct imports from the U. S.
	Yen	Yen	%
1911/12	865,005.34	9,290,849.11	9
1912/13	548,711.40	5,255,170.91	10
1913/14	946,601.21	9,112,582.05	10
1914/15	781,836.69	5,694,479.55	14
1915/16	2,275,230.48	9,629,702.81	24
1916/17	3,099,585.54	18,036,199.53	17
1917/18	13,775,597.86	39,650,411.70	35
1918/19	26,460,773.36	70,165,326.10	38
1919/20	16,152,885.07	50,544,421.97	32
1920 (4 months only)...	1,805,440.19	7,798,782.73	23
Grand Total ...	87,814,108.19	284,703,851.43	31



THE FUSHUN COAL MINE
One of the Largest Open Cut mines in the World, Operated by the South Manchuria Railway Company

The figures given above are only those which can be clearly distinguished as direct importations by the company from the United States. Large quantities of American materials have been purchased locally and in China and Japan, or imported through Japanese and other commission firms, which does not show on the books of the Railway Company as proceeding from America. A conservative estimate of the value of American materials sold to the South Manchuria Railway in the past fourteen years is Yen 100,000,000, or $50,000,000 gold. To this, must be added the immense purchase from America by private Japanese concerns, like Mitsui, Okura, Suzuki, and others, for the equipment of iron and steel foundries, mining, oil, flour and other industrial enterprises located within the railway zone. The exact figures are not available, but experts estimate this as being in the neighborhood of Yen 50,000,000, ($25,000,000) or a grand total of $75,000,000 of American engineering products sold to the South Manchuria Railway Company and its allied concerns within the last fourteen years, or $8,000,000 more than the entire Chinese government railway market in the same length of time. Reduced to loan terms, this represents an investment of $150,000,000 of American capital in Chinese government railway bonds, or approximately equal to the total pre-war valuation and capitalization of the loan built system.

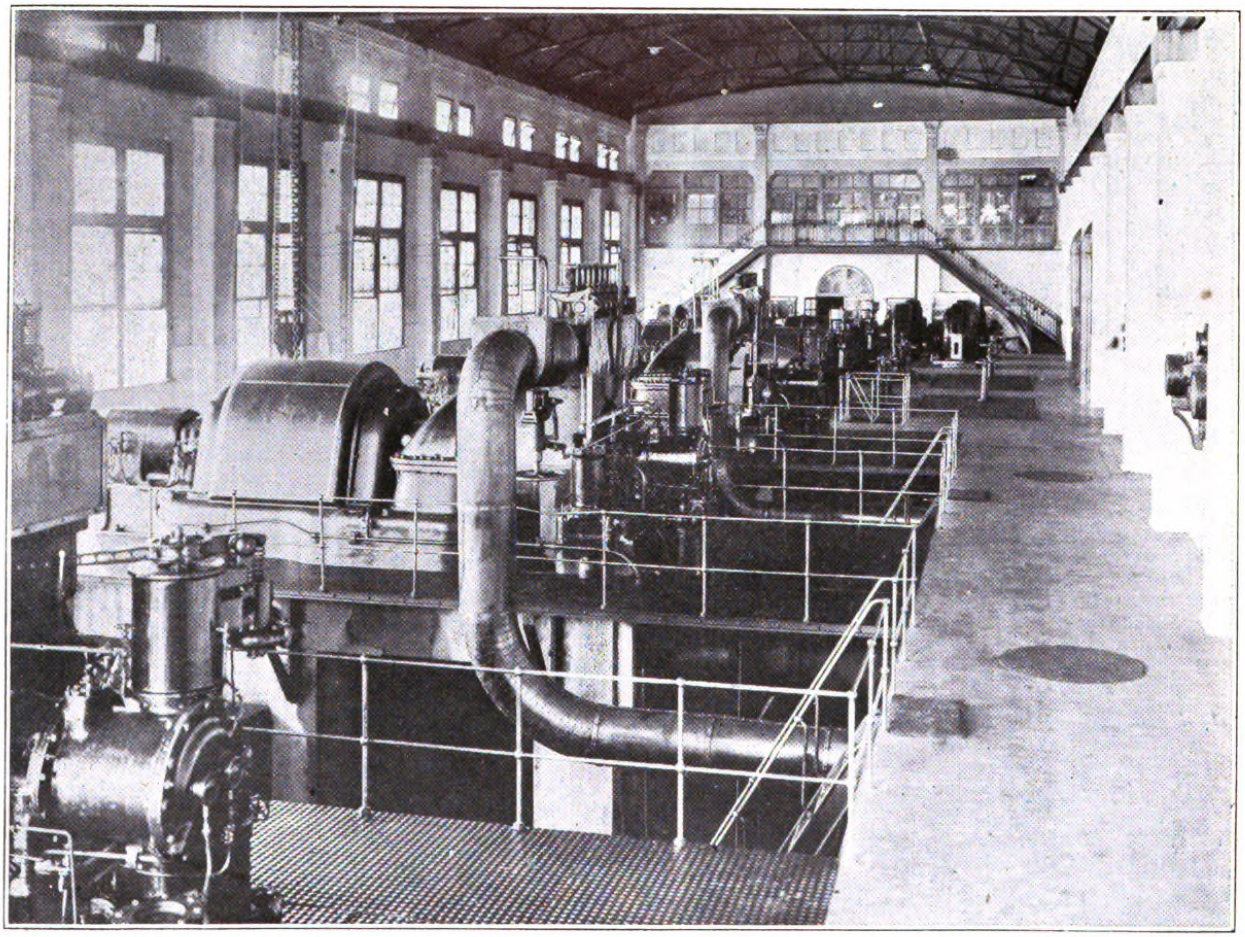
The annual report of the Chinese government railways gives the following returns of rolling stock up to December 31, 1918, on the entire 3,700 miles of open lines: 638 locomotives, of which 130 are for shunting purposes; 1,332 passenger cars; and 10,594 freight cars with a total carrying capacity of 241,050 tons, an average of 22 tons per car. The Japanese managed South Manchuria Railway, with only 700 miles of lines, operates 328 locomotives, over 300 of which have been purchased in America; 298 passenger coaches, of which over 100 were imported direct from the United States, and the rest built from American material to American specifications at their own workshops; and 4,339 thirty-ton American type

freight cars, of which over 1,500 were purchased direct from American manufacturers. In addition, the South Manchuria Railway owns and operates 45 miles of heavy electric railway, using eight 45-ton General Electric locomotives, the first and only electric railway service in Eastern Asia. Nearly all of this equipment has been purchased in America, and what is manufactured on the ground in the company's workshops is made to American specification.

These figures speak for themselves. They tell us that the South Manchuria Railway is, and has been, the only railway in China where American materials have enjoyed equal opportunity; the only door that was wide open for Americans to enter and compete with the manufacturers of Europe on an even basis, without the payment of "squeezes" or subjection to the petty discriminations that have prevailed in other parts of China. The door to equal opportunity for American manufacturers of railway material has been closed on all the loan-built lines by the operation of the

in Manchuria means to American manufacturers, the following comparison taken from the official figures will be highly interesting and illuminating. The total operating revenues of the 3,700 miles of Chinese government railways for 1916, was $62,761,720, against operating expenses of $28,842,277. After deducting the net income debits from the net income the lines showed a surplus of $8,619,531.

Compare the above with the latest official figures of the 700 miles of Japanese managed South Manchuria Railway and its subsidiary enterprises. "In spite of the financial commitments assumed by the Company in fulfilment of the administrative duties prescribed by the Japanese government, it has been able to derive a fair amount of profit from its enterprises. The gross revenue in 1907 amounted to Yen 12,540,000, the net profit to Yen 2,020,000. The figures for 1919-20, were Yen 153,000,000 and Yen 24,370,000 respectively, the increase in the case of both items being twelvefold. The early dividends of 6 per cent. have been increased to 10 per cent. The original cost of the Company's properties was



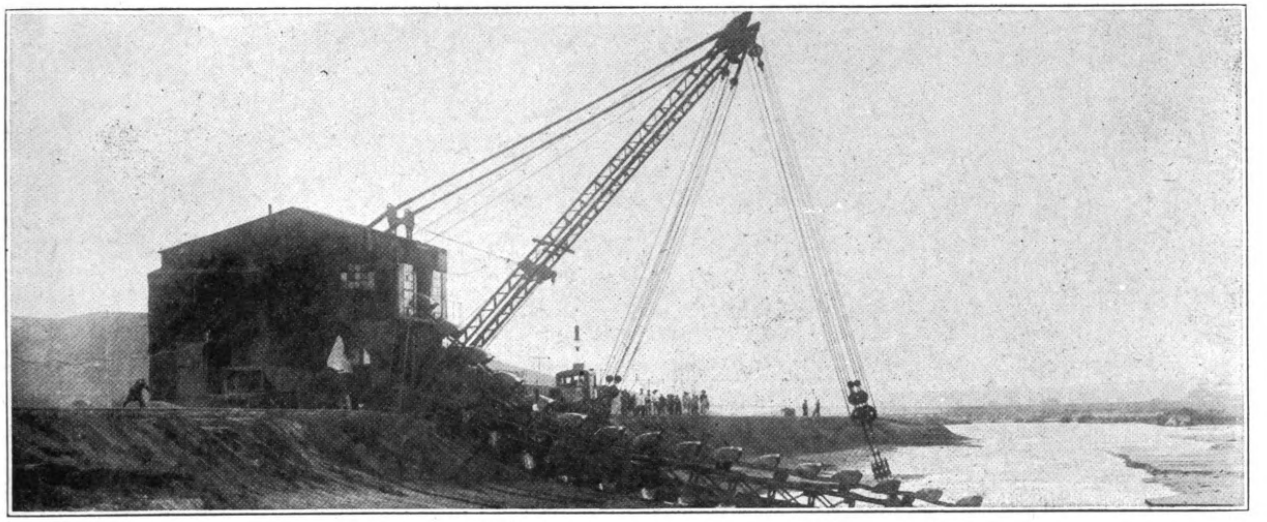
The Electrical Generating Room of the Great Mond Gas Plant at the Fushun Coal Mines of the South Manchuria Railway Company

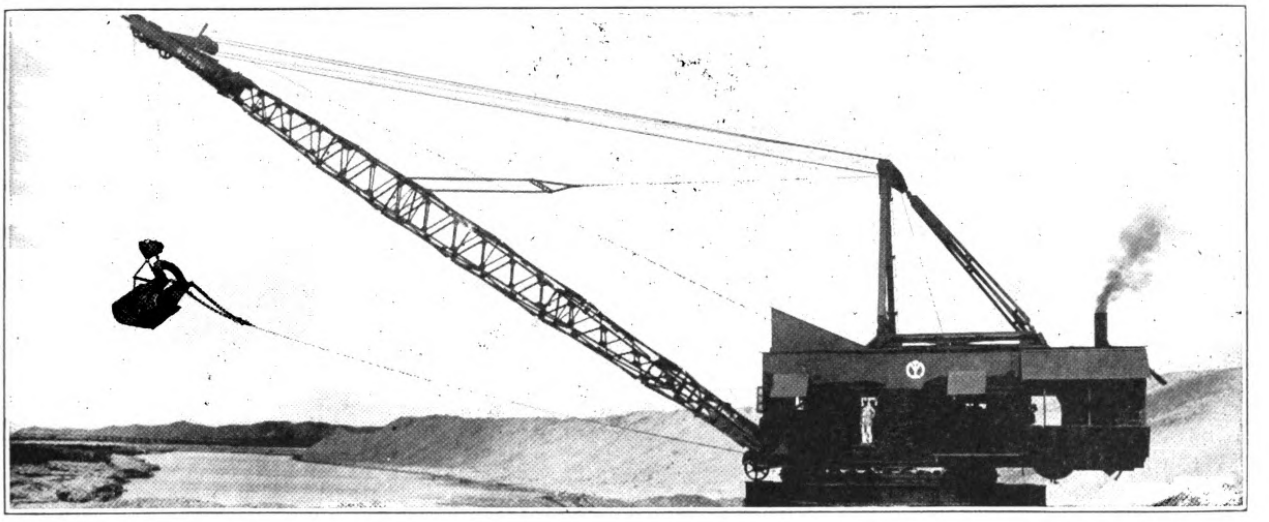
clause conceding preference to the materials of the country furnishing the loan. As we return gradually to normal conditions, the "war business" that has come to us through the inability of the lending nations to supply the requirements of these lines will have to be surrendered; and, as none of these lines will come under the scope of the new international Consortium, the door may again be closed to American manufacturers on all existing Chinese lines, excepting the three lines under purely Chinese management.

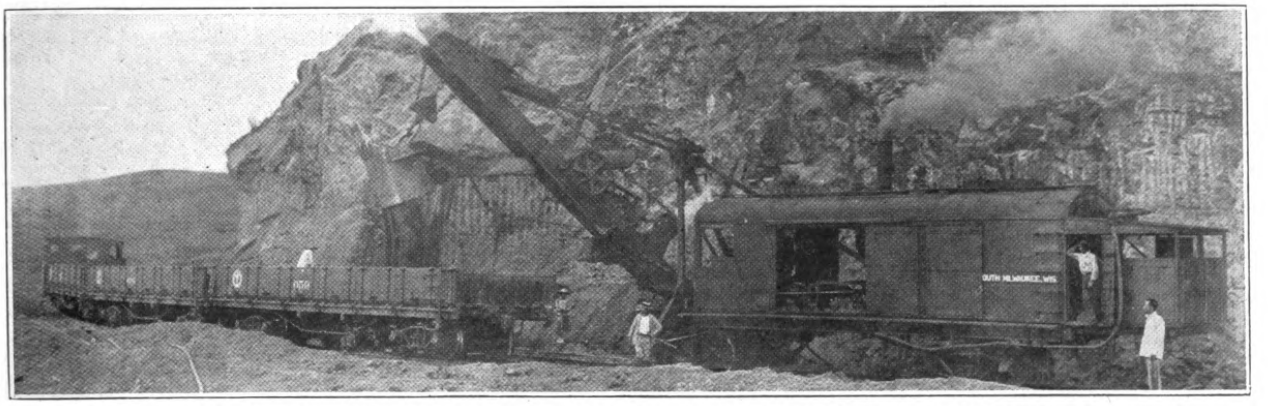
To understand thoroughly just what the railway supply market

roughly Yen 500,000,000, but at a modest valuation they are now worth Yen 1,400,000,000, a striking proof of the Company's financipal position." At normal exchange, the silver dollar and the yen may be said to be on a par, so the above comparison tells us that the 700 miles of Japanese lines and its enterprises in Manchuria, is not only twice as profitable as the entire 3,700 mile system of the Chinese government, but the one market where American railway materials have a change to compete. It will be noted that the American purchases for the South Manchuria Railway are

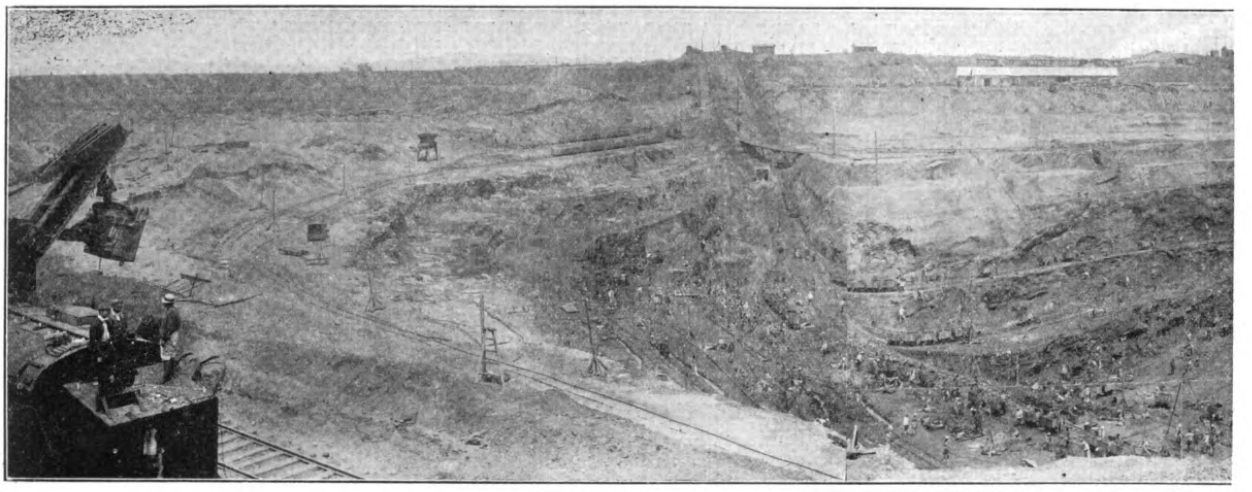
MODERN AMERICAN METHODS IN MANCHURIA







One of the secrets of the success of the South Manchuria Railway Company is seen in the above illustrations of the huge Bucyrus Steam Shovels and Excavators, doing the work that in other parts of China is still performed by coolies with their ridiculously small baskets and trowel-like shovels. There are seven of these Bucyrus Steam Shovels at work along the line of the South Manchuria Railway and several of the sand excavators for supplying the huge demands of the Fushun Coal Mines.



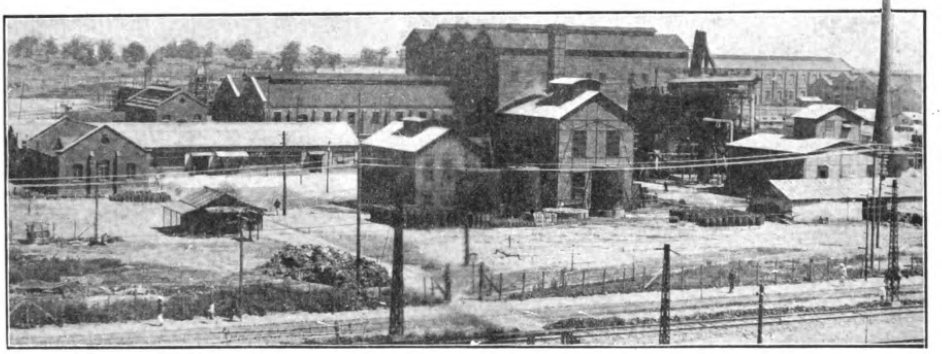
THE OPEN CAST COAL MINE,

only 31 per cent. of the total of Yen 284,000,000 ($142,,000,000) expended for materials. It is well to let these figures soak into the mind.

miles of Chinese controlled lines under honest and capable management should be at least five times as great, or $60,000,000 gold instead of $8,000,000 silver, as is now the case.

Total value of 3,700 miles, Chinese Government Loan Built Railways	**$135,000,000**
Total Expenditure in Europe for Materials	**67,500,000**
American Materials Purchased	**nil**
Total Expenditure of Japanese South Manchuria Railway Company for Materials	142,000,000
American Materials Purchased	50,000,000
American Materials Purchased for Industries	25,000,000

These figures prove that the American people have been systematically misled by half informed journalists and officials concerning the operation of the Open Door in Manchuria. If these figures mean anything at all, they mean that all our ideas on this subject must be reversed. They tell us that the only real Open Door in the whole length and breadth of China for the supply of railway and engineering materials, exists exclusively in Manchuria. The above figures also provide an illuminating advertisement of the possibilities of honest, efficient management and operation of railway enterprises in China. If the 700 miles of Japanese controlled lines with their subsidiary enterprises show a profit of Yen 24,000,000 ($12,000,000), the profits from the 3,700



Coke Oven and Sulphuric Acid Factory, Fushun, Manchuria

The South Manchuria Railway has not once called upon Americans to advance funds to finance one of these orders for materials. Our asset has been good-will and friendship. All that Japan has sought in return has been our trust, confidence and friendly co-

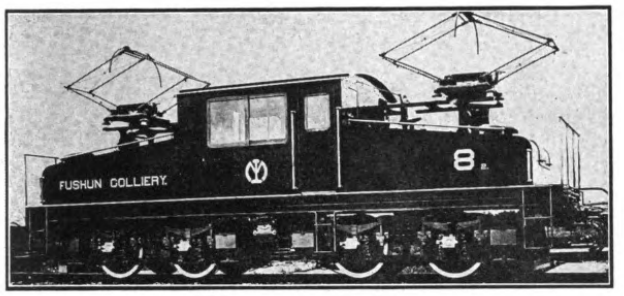
The Colliery Towns of Chienchinchai, Manchuria

FUSHUN COLLIERY, MANCHURIA

operation. How have we rewarded our good friend and customer? From the time that Japan wrung from Russia her right to exist and obtained guarantees that the territory of China would never again be employed as a base for an attack upon her independence, American diplomacy, official and unofficial, has concentrated upon weakening her position in Manchuria and handing her over again, bound hand and foot, to the vengeance of her arch enemy. Since the day that the late Willard Straight, then Consul General at Mukden, entered into negotiations with Tang Shao-yi for the establishment of a Manchurian Bank, down through all the subsequent efforts of American diplomats to the recent Consortium negotiations, American diplomacy has been centered upon the preservation of China's sovereignty over a part of her territory that she had willfully and treacherously surrendered to Russia for the sole purpose of revenging herself upon Japan. Americans have clung to an ideal, but instead of laying down the law to the real culprit, the burly, bragging, bully of Asia, they have picked on the under dog, on the little nation whose very existence depended upon maintaining her precarious foothold in Southern Manchuria, so long as Russia remained in the north with Harbin as the Far Eastern military capital of her Transbaikal and Amur regions. Once only have we tried to undermine the Russian position in Manchuria, through the Chinchow-Aigun railway, and the lesson we received at that time told us that all the other nations were aligned against us. Since then, we have continued to nag Japan in the south, trying to give effect to our one-sided ideas of maintaining the sovereignty and integrity of China, while ignoring the similar position of Russia in the north. Never, in the long course of human history, has the world witnessed such an instance of misdirected diplomacy to save a corrupt and intriguing government from the consequences of its own folly.

Notwithstanding this rather discourteous treatment, Japan comes to us and says, in effect "if you distrust me and my motives in Manchuria, work with me, cooperate with me, and together we will develop the great natural resources of this region. Through commercial partnerships we will learn to understand each other better, and our association will be a guarantee to China and the world that China's interests will be safeguarded and advanced." Americans have turned a deaf ear. They do not understand. Only a few broad-minded and far-seeing men like Judge Elbert H. Gary, head of the Steel Corporation, Mr. C. M. Muchnic, of the American Locomotive Company, Mr. C. A. Coffin, head of the General Electric Company, the heads of the Westinghouse and Western Electric concerns, Mr. Frank H. Vanderlip and others, realize what this friendly cooperation has meant to American industry and trade in blazing the way for our materials and specifications in the Far East. Other equally important manufacturers and financiers, can see only the alluring prospects held out in the

Oyama Pit, Fushun Colliery, Manchuria



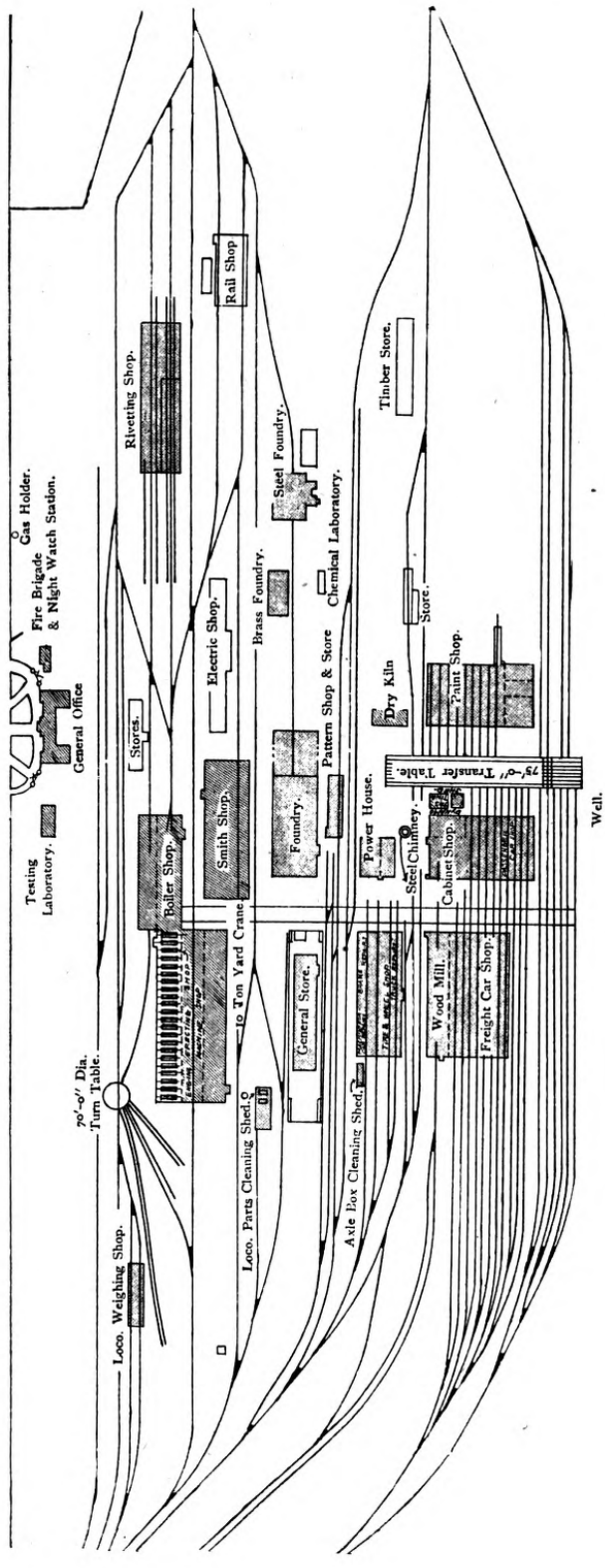
Fifty Ton Electric Locomotive at Fushun Colliery

raising of loans to finance Chinese railway construction. They fail to realize that until the Consortium gets down to work, the door to American railway activity in China is locked and barred. There is no place in all China where American capital can construct a railway without infringing upon the rights of other Powers, a condition precipitated by the diplomacy of the present administration.

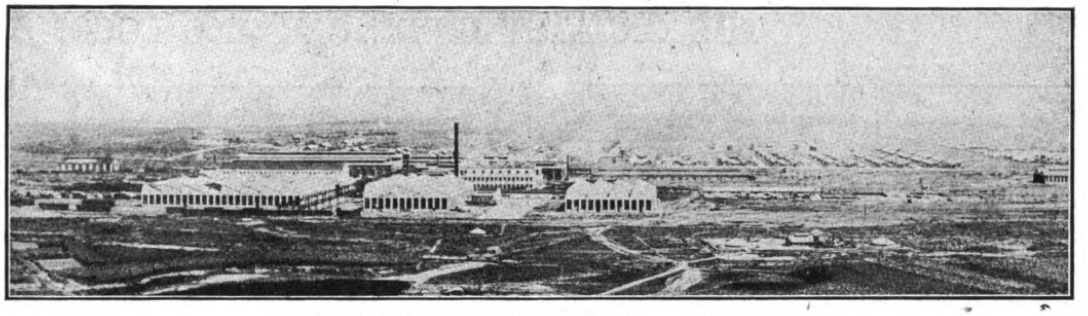
These Americans seem to overlook the important fact that the war is over, that we are rapidly drifting back to normal times and will soon have to meet the full force of European competition in the supply of China's railway requirements, with the door closed once more against us on all the loan-built lines. Our railway supply market in China will then be restricted to such insignificant construction as may be undertaken with Chinese capital, and to our participation in the business that will be developed under the Consortium. Here our manufacturers will have to compete with those of Great Britain, France, Japan, perhaps Belgium, and with preference given to materials manufactured in China. Unless there is a distinct understanding that each nation in the Consortium will receive its proportionate share of the orders for railway materials for the construction and equipment of these new lines, many American manufacturers will be frozen out. They cannot compete. This is a very conservative statement of facts, one that we challenge the Department of Commerce to refute. In this case, Manchuria will continue to be the best railway market for our manufacturers. I say, "in this case," merely to emphasize the situation and challenge some of the official Chinese boosters to answer it. It should read "in any case," as the development of Manchuria will remain outside the scope of the Consortium. Japan has several hundred more miles of railway to construct in this province, and the South Manchuria Railway Company has increased its capital for the purpose of proceeding with this new development. Japan has sufficient capital to undertake the major part of this construction and there are many private Japanese concerns who will follow with their industrial plants. The market for machinery will be there, to the same extent that it has been in the past ten years, a market as potential in its greatness as the whole of China, under its present system of government.

The development of Manchuria is still in its infancy. The ground has hardly been scratched. There await wonderful opportunities for American capital to cooperate with Japan and China in the development of these vast natural resources. Japan has evidenced her good intentions and given proof of her friendship for America and China by entering the Consortium on an equal footing with the other nations, thus providing a guarantee to the Four Great Powers for the safety of investments in this territory. This single outstanding fact is sufficient evidence that China's interests will be adequately safeguarded, and, if Chinese capital desires to participate in the benefits of this development, the door stands wide open for safe and profitable investment in a three-cornered partnership under guarantees of a square deal such as do not prevail in any other section of the unhappy Republic. That Japan is desirous of having Americans cooperate with her in Manchuria is attested to by the highest authority. In the recent special Japan-America number of the *Yomiuri*, Dr. R. Nomura, President of the South Manchuria Railway, made the following enlightening appeal to the members of the visiting delegation of American Congressmen:

"In Manchuria the open-door policy as repeatedly proclaimed by the Japanese government is strictly observed, and Japan has



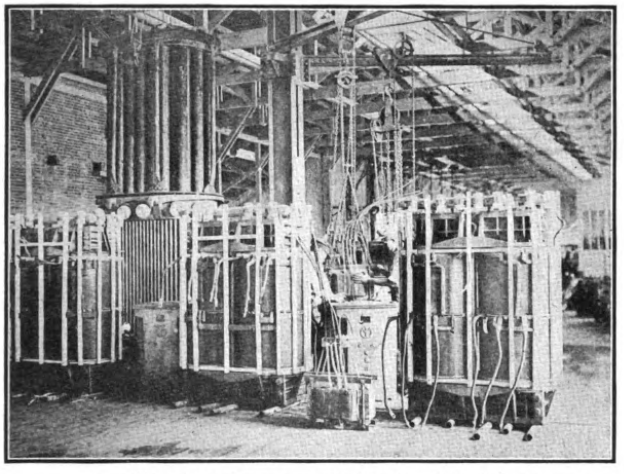
Grouad Plan of Shakako Workshops



Bird's Eye View of Shakako Workshops and Colony

never attempted to monopolize interests in Manchuria. Under proper arrangements, I believe there are ample fields for American-Japanese co-operation in Manchuria.

" Manchuria possesses rich natural resources. Soya beans which have recently come into international demand are largely produced in Manchuria. Kaoliang and lumber of Manchuria are also worthy of note. Industrially Manchuria has a promising future. The Fushun Coal mines, containing 1,200 million tons of coal, and the Shinchu Coal mines of almost equal magnitude will be able to supply abundant coal at low prices. Iron, equally important as coal as a material for industry, can be mined in the vicinity of Anshan in unlimited quantities. Furthermore Manchuria is favorably situated to obtain the supply of low priced Chinese coolies. Manchuria, with all these potential resources and wealth is, in my opinion, a fitting field of activity for our American



Assembling Transformers in the Electrical Department

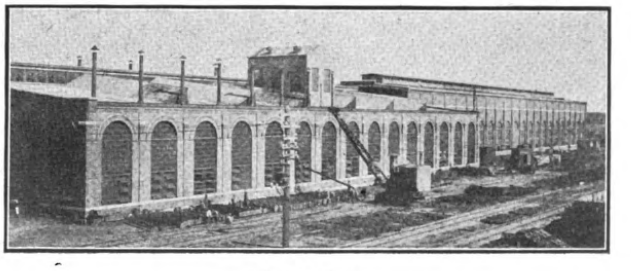
friends, who possess enormous capital for investment, superior engineering skill and energetic, enterprising spirits. Our company has been established for the purpose of bringing the rich resources of Manchuria to the world, and has been working toward that end. I leave it to the able judgment of our friends to foresee what position will be commanded by the South Manchuria Railway when the potent wealth of Manchuria is utilized and Siberia, the treasure land to the north of Manchuria, is exploited.

"Our company has enjoyed unbroken and intimate relations with the United States ever since its organization, and our present development is due largely to the efficiency of American products. It is no exggeration that all the machinery and materials for the construction aad operation of our railway system and other enterprises have been supplied by the United States. Not only has America supplied us with Pullman cars, 205 locomotives, more than 1,600 passenger and freight cars, 53,000 tons of rails and an enormous amount of other materials necessary for the operation of railway, but all the machinery for the Fushun Coal mines, the Anshan Steel Works, the gas plant, electric plants, building materials and even office utensils have been purchased from the United States. The company has been purchasing every year more than 30,000,000 yen of American products, and the amount of our purchases is expected to increase largely in future, as our plans for development demand more of all sorts of machinery and materials. It is American machinery and materials that have largely contributed to make the present development of Manchuria possible. The future of Manchuria, therefore, depends upon American products.

"In the management and operation of our railway, we have adopted the American system, and since our organization we have been proving the superiority of the American engineering arts and the economic advantage of the American system. We are gratified to realize that we have introduced and have always been in favor of American products and systems."

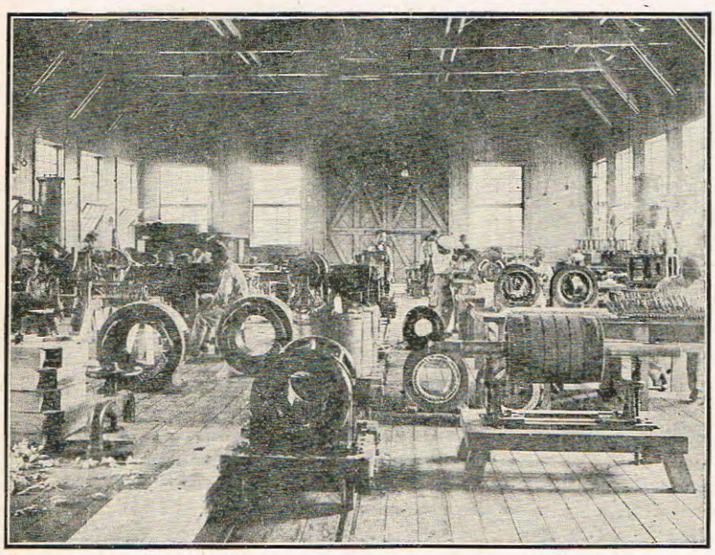
This is not propaganda designed to mislead. In the most modest terms, it reveals for the first time some inkling of the vast purchases made by the South Manchuria Railway Company in the United States, at a time when the patience of Japan must have been strained to the breaking point through American attempts to undermine her position in Manchuria, discredit her throughout China, and profit by a boycott against her trade that was undeniably traceable to the errors of American diplomacy at Paris, and to the efforts of defeated and discredited advisers who, to cover their incompetency, began to yap for war with Japan. These figures reveal that Japan's silent friendship for her great and good friend who led her out from the seclusion of centuries and stood by her in sympathy while she fought her way to the front ranks of the world's great powers, has been expressed in terms of

Main Office, Shakako Workshops

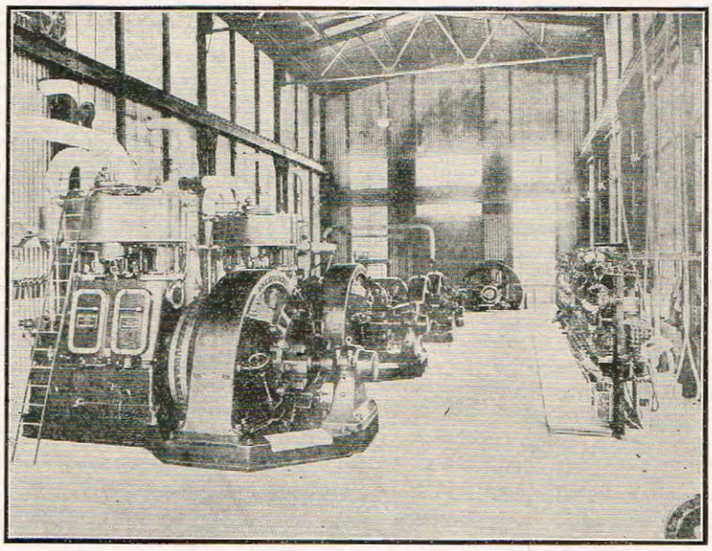


Boiler Shop

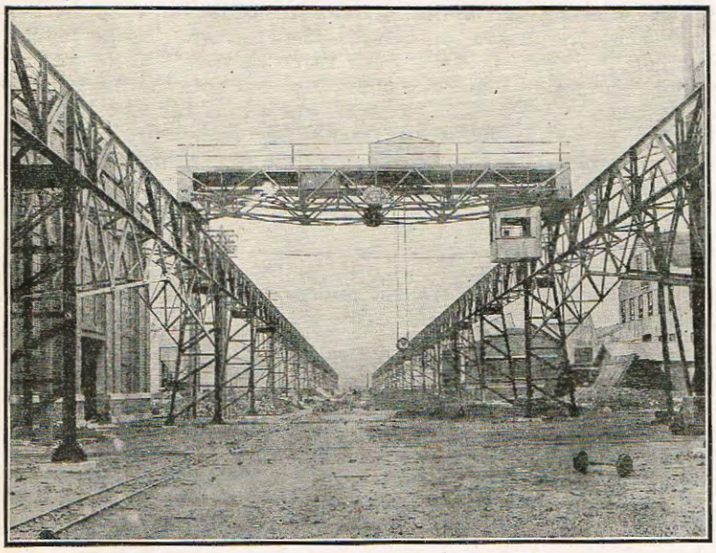
THE GREAT MODERN CAR AND LOCOMOTIVE



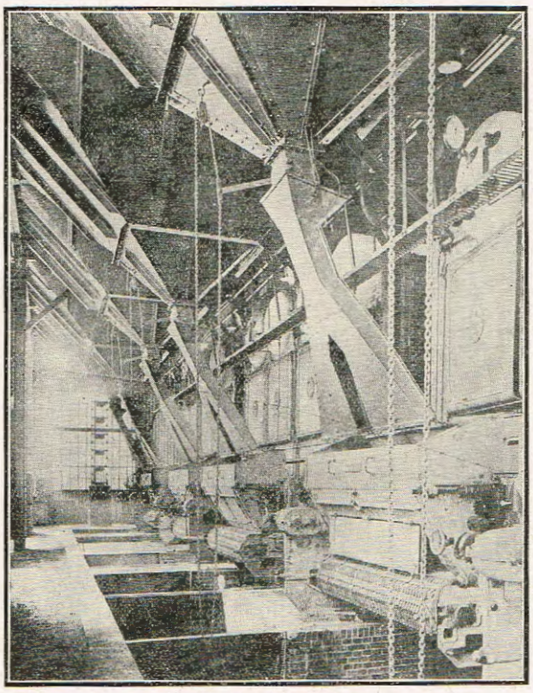
Winding of Motors



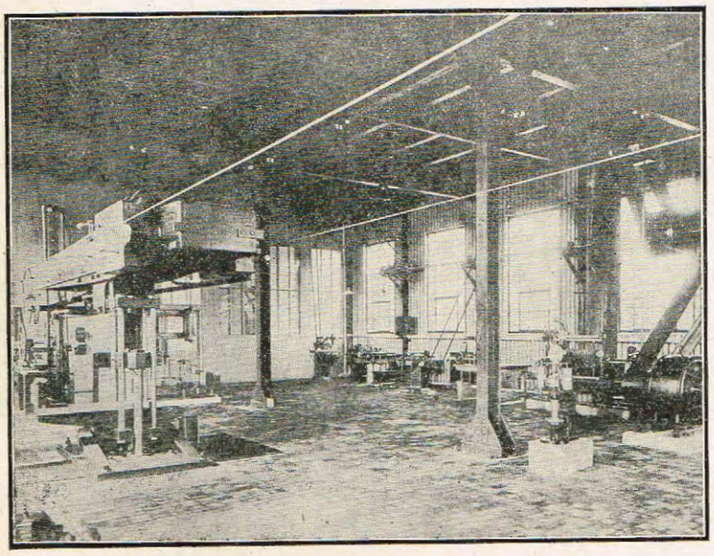
Electric Power House



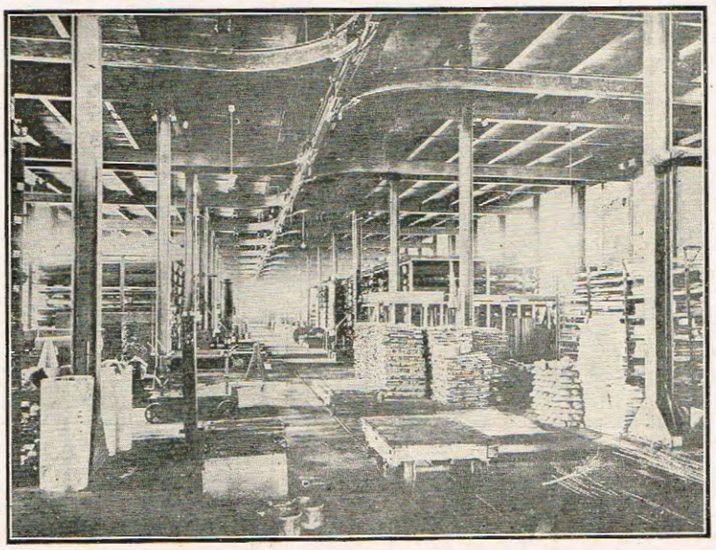
Yard Crane



Boiler Room

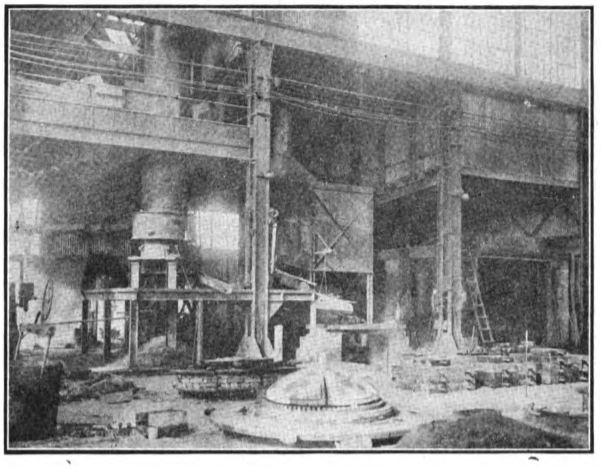


Testing Laboratory

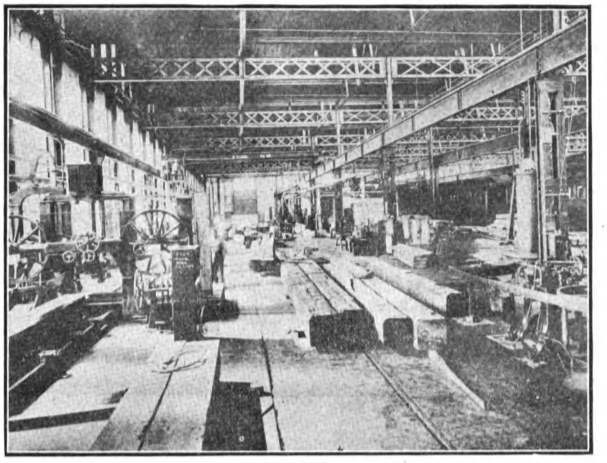


General Store House

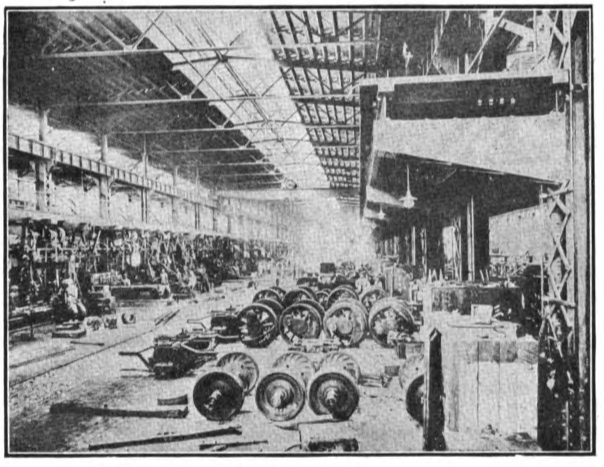
BUILDING PLANT AT SHAKAKO, NEAR DAIREN



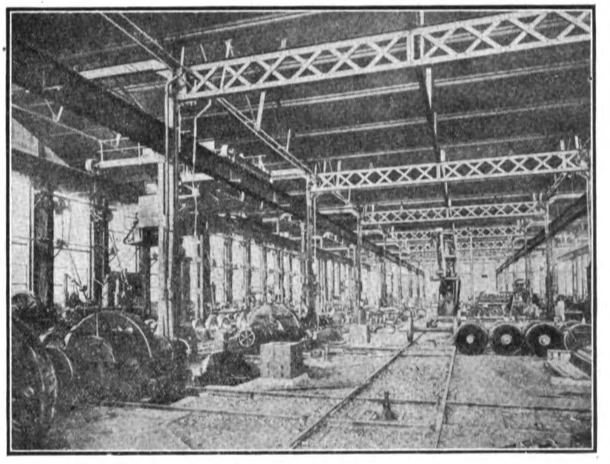
Steel Foundry



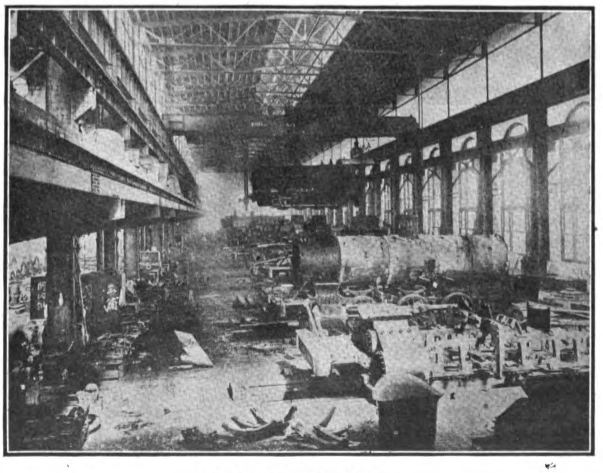
Wood Working Shop



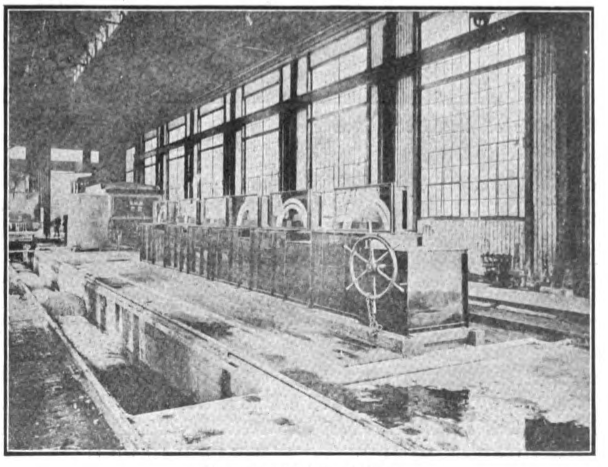
Machine Shop



Car Truck Shop



Engine Erecting Shop



Engine Weighing Shop

THE OLD WAY AND——

Bags of Beans stored on Dairen Wharves before the Establishment of the S. M. R. Warehouse.—Ten Million Tons of Soya Beans are hauled annually by the South Manchuria Railway from the Fields of Manchuria to the Wharves at Dairen, where they are Shipped to all the Countries of the World, or Converted into Oil and Bean Cake at the large Mills Erected at Dairen.

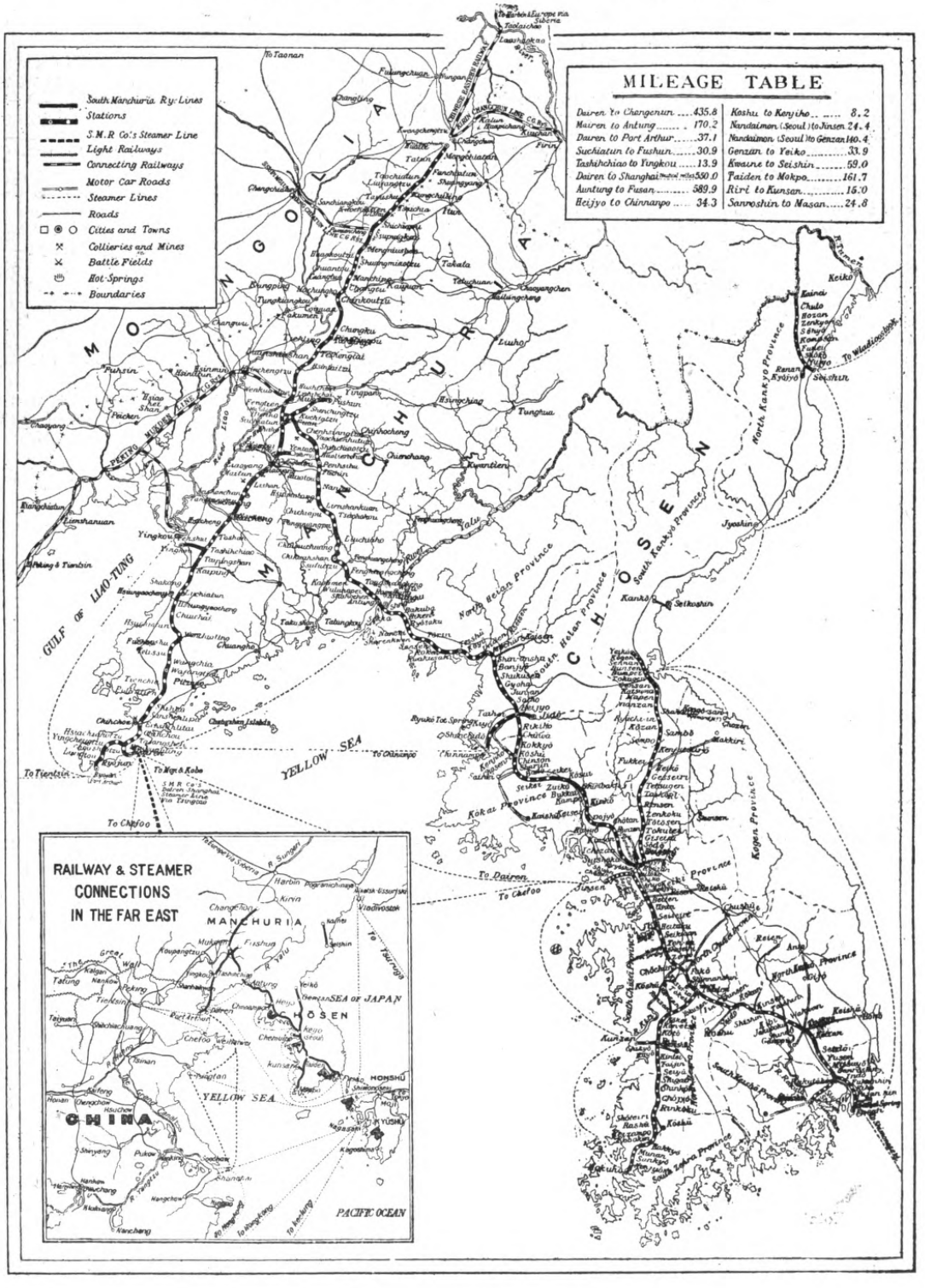
——THE NEW

One of the Several Permanent Concrete Wharves and Warehouses of the New Wharf System of Dairen Harbor for the Storage and Handling of the Immense Soya Bean Shipments which pass through the Port.

practical gratitude, the magnitude of which few have suspected. FOR THESE FIGURES REVEAL THAT JAPAN'S FRIENDSHIP FOR AMERICA EXPRESSED IN TERMS OF DOLLARS AND CENTS HAS BEEN WORTH MORE TO US THAN IF OUR BANKERS AND INVESTORS HAD FINANCED, CONSTRUCTED AND EQUIPPED ALL THE EXISTING CHINESE GOVERNMENT RAILWAYS. THESE FIGURES TELL US THAT THE MANCHURIAN RAILWAY SUPPLY AND MACHINERY MARKET AND THE GOOD WILL AND FRIENDSHIP OF JAPAN IS WORTH MORE TO US THAN ALL THE PROSPECTIVE BUSINESS THAT WE CAN OBTAIN FROM CHINA. These figures stand as a silent testimonial to the gratitude of Japan for timely aid tendered in her hour of great need in 1904. She has repaid the debt with compound interest.

Americans may well ponder over the question of how long it will be in the present state of the international money market and the continued unrest in China, before American capital invested in Chinese railways through the new Consortium, will reach the amount that will permit our manufacturers to draw dividends to the extent of $15,000,000 a year in orders for materials? How long will it be before $150,000,000 can be raised by the Consortium for railway construction in China? And remembering that the United States and Japan will have to carry the British and French share of these loans for some years and permit their manufacturers to compete on equal terms or allot them their proportionate share of the materials, it may be worth while for some economical shark with a taste for guessing, to figure out just

SOUTH MANCHURIA RAILWAY



what percentage of these orders will be booked by American manufacturers. A little superficial study will convince us that it will be many, many, weary years, before the loans are raised that will insure to our manufacturers orders for railway materials aggregating $15,000,000 a year, or more. We have before us the official figures that the South Manchuria Railway has expended over $142,000,000 in materials since the line came into the possession of Japan, which is equivalent to an investment of $300,000,000 in Chinese government railways, or double what the entire system is worth.

This comparison is not made to disparage China, as some day, under a stable government, when the power to make loans is taken out of the hands of the individual ministers and military grafters and vested in a parliament and responsible ministry, the Chinese railway market will become one of the most profitable in the world. It is also true that to create this profitable market for American manufacturers, immense amounts of American capital will have to be invested in China. For every dollar in orders for materials that will come to America from China, the American investor will have to lend China *two*, and if we are to carry the financial load for France and Great Britain and permit their manufacturers to compete on an even basis, or be allotted their proportionate share of the materials, the American investor may have to put up *four* dollars in order that his industries may receive *one* back in trade. It is no exaggeration therefore to emphasize that the Chinese market is one of the future. The South Manchuria Railway market is a market of TO-DAY, in which the American investor has not been called upon to furnish one cent of capital. The Closed Door to Manchuria does not exist. These figures conclusively prove that the Door that opens into China through Dalny is the only real bona-fide Open Door in all China for American railway and engineering materials.

These figures prove that Japan is America's friend; a friendship, which in view of our misdirected diplomacy, passeth all understanding. *Daylight has come in Manchuria.* Americans are permitted for the first time to understand the full meaning of Japan's silent partnership from which our steel and machinery manufacturers have been drawing fat dividends without the investment of a dollar. In the light of these facts, we have no patience with those, who, in their misguided efforts to antagonize Japan, would destroy our best engineering trade connection in Asia, and the best advertisement of American railway practice outside the United States, for the sake of problematic future benefits that must be created through the raising of huge Chinese loans, and subject to the recriminations that must follow any attempt on our part to properly safeguard our investments through supervision over expenditures and the management of Chinese railways. It is high time that the American manufacturers who have been drawing dividends from this partnership of friends, in which they have not been called upon to participate with capital, should make their voices heard and felt at Washington against the systematic campaign to deprive them of the benefits of this trade. WE ARE SACRIFICING THE SUBSTANCE TO CHASE THE SHADOW. THE FACTS ARE HERE BEFORE YOU. THEY CHALLENGE REFUTATION. THEY ARE PROOF THAT YOU HAVE BEEN SYSTEMATICALLY IMPOSED UPON AND MISLED BY A COTERIE OF PRO-CHINESE OFFICIALS, AND THAT THE ONLY OPEN DOOR IN ALL CHINA FOR YOUR PRODUCTS IS IN MANCHURIA.

AMERICAN TRADE WITH MANCHURIA DURING THE YEARS 1915—19.

The total of American export to, and import from, Manchuria for the years 1915—19 amounted to 98,848,889 haikwan taels.

The following table shows the annual amount of this trade:

	Hk. Tls.
1915	3,058,959
1916	5,032,864
1917	21,449,765
1918	39,428,952
1919	29,898,349
Total	98,848,889

It may be seen from the foregoing that American trade with Manchuria has been increasing rapidly. In 1915 its returns were Hk. Tls. 3,000,000 in round figures; in 1918 they exceeded the sum of Hk. Tls. 39,000,000, which is an increase in four years of about thirteen hundred per cent.

The following table shows the annual amount of American goods imported by Manchuria during the years 1915—19:

	Hk. Tls.
1915	2,643,416
1916	2,478,655
1917	5,528,113
1918	11,054,987
1919	19,500,778
Total	41,205,949

Thus the amount of American goods imported by Manchuria in 1915 was Hk. Tls. 2,600,000; in 1919 it was Hk. Tls. 19,000,000. This is an increase in five years of about nine hundred per cent.

The principal goods imported from America were petroleum, iron and steel, machinery, and household goods*. The following is the amount of each in 1918 and 1919 respectively:—

	1918 Hk. Tls.	1919 Hk. Tls.
Petroleum	1,133,462	3,605,744
Iron and Steel	3,690,568	4,788,726
Machinery	1,306,121	6,559,636
Household goods	1,861,867	1,068,662

America's important position in the foreign trade of Manchuria may be seen from the following comparison of the total of American trade with that country with that of whole Manchuria trade:—

	Hk. Tls. 1918	Hk. Tls. 1919
Manchuria's foreign trade	195,124,973	274,766,651
America's trade with Manchuria	39,428,952	29,898,349
	or 20 %	or 10 % +

The annual amount of England's trade with Manchuria during the years 1915—1919 is indicated below for the sake of comparison.

	Hk. Tls.
1915	8,218,574
1916	9,337,260
1917	12,629,963
1918	15,596,559
1919	23,604,260

As against the 20 per cent. of America, England's trade with Manchuria for 1918 was less 8 per cent. of the latter's foreign trade and for 1919 a little over 8 per cent. as against the 10 per cent. of America.

Note.—The customs returns of the four open ports of South Manchuria are the basis of the foregoing figures.

*America exported in 1918—19 75 per cent. of the petroleum consumed in Manchuria, 47 per cent. of iron and steel, and 65 per cent. of machinery and mechanical appliances.

Liggett and Myers Enter China

Mr. George Whitaker, director of Liggett & Meyers Tobacco Co., one of the largest firms in the tobacco trade of the world, announced recently in Shanghai that his company has definitely decided to enter the China field. A staff, comprising picked men from the "L & M" organization in the United States, is now being mobilized at Shanghai.

Offices have been opened at 5 Siking Road, Shanghai, Mr. J. W. Andrews being manager of this branch. Mr. R. S. Rogers is manager of the Hongkong branch and Mr. G. C. Wilmer sales manager for North China. The firm is already well established in the Philippines. Mr. Whitaker has made a complete survey of the Far Eastern field and is understood to have made a very favorable report of the firm's prospects in the Orient.

China's Effort to Recover Control Over the Chinese Eastern Railway

PEKING, October 27.—Mr. Yeh Kung-cho, minister of communications, and Mr. C. C. Wang, Chinese representative on the inter-Allied board directing the Chinese Eastern Railway, have been working for some time to recover for China a fair measure of control over that important line. To that end and to assist in the ultimate recovery of the railway from non-Chinese ownership and direction a new agreement was recently reached with the Russo-Asiatic Bank. On October 9, a Presidential Mandate was issued explaining the nature of the steps taken and the Chinese reasons for action. Subsequently, it developed that there was strong opposition to these proceedings on the part of several if not most of the legations. This opposition culminated in the calling of a conference which, it is understood, will consider a proposal to place the line under the control of the new Chinese financial consortium.

Chinese who have been looking particularly to the American and British government for encouragement and help are much disturbed over these reports. It is well known that the plan already approved by the Peking government was originated by Mr. C. C. Wang and that he expected help and not obstruction from the American and British legations. The sequel will be watched with intense interest.

The mandate of October 9 is as follows:—

"Since the political crisis in Russia, the Chinese Eastern Railway has been seriously affected. Whenever political changes happened a state of chaos and disorder prevailed in the administration of the railway. Consequently the financial relations of both countries and international communications have suffered. At the very beginning, our government has decided upon a policy of keeping the railway free from all political entanglements, therefore, since the sixth year of the Republic, China has from time to time despatched military and police forces to preserve order and prevent disturbances. In order to insure the safety of the railway, the Chinese government shall temporarily assume the responsibilities and exercise the rights of control regarding the administration of the railway, which formally belonged to the Russian government as provided in the original agreement made between the Chinese government and Russo-Asiatic Bank.

"Now the ministry of communications states, in a memorandum, that in the spring this ministry began negotiations with the representative of the Russo-Asiatic Bank, which is the original party to the Chino-Russian Agreement, with the object of making a supplement agreement. The essential points which have since arrived at are: to increase the number of the Chinese members of the staff for the joint administration of the railway, to make it purely commercial concern and to have the commercial concern, and that the Chinese government shall temporarily assume the executive control of the Chinese Eastern Railway on behalf of the Russian government until definite arrangements are reached with a united Russian government recognized by China and so forth.

"The proposal of the ministry of communications is hereby approved. The said ministry is hereby ordered to exert its utmost through the director-general of the railway in directing the Chinese and Russian staff to work for the improvement of the Railway. The high military and civil authorities of the Three Eastern Provinces are also hereby ordered to co-operate with the ministries concerned by adopting appropriate measures designed for the adequate protection of the life and property along the Railway territory, so as to satisfy my earnest desire of protecting the people and maintaining the line."

The following is a translation of the new agreement as printed in the *Ching Pao* and reproduced by the *North-China Daily News*:

Mr. C. C. WANG,
Chinese Railway Expert who may Attend Consortium Conference

"Since the Russian revolution foreign and Chinese opinion in regard to the operation of the Chinese Eastern Railway have shown four tendencies.

"The Soviet government after its establishment gave out the report that it was prepared to return the line to China unconditionally. Since China never received and official notification, the rumour received no serious attention.

"For some time seve[illegible] foreign countries have been i[illegible] favor of control by an international board. China of course could not recognize such a scheme since the railway concerned only China and Russia. If international control of this line were permitted the same system of administration might by applied to all lines in China.

"Sole control by China should be our ultimate objective, but as long as Russian business men have a part capital interest in the line, in spite of the fact that preferential treatment of the Russian diplomats and consuls has been withdrawn, we must protect Russian interests and postpone the ultimate redemption of the line.

"A fourth solution has been suggested by the ministry of communications. The objectives of the ministry of communications are five: (1) The recovery of rights which have been lost in the original contract and the working agreement of the railway company. (2) The employment of Chinese in the higher posts in the company. (3) The neutral attitude of the government, favoring neither the old nor the new Russian parties. (4) The elimination of any third power from participation in the operation of the line. (5) The exercise of the highest functions on behalf of the Russian government, so that when a stable Russian government is formed the way will be prepared for a revision of the original contract.

"Negotiations along these lines with the Russo-Asiatic Bank have been going on for several months. The point of contention

was in regard to the number of directors on the board, China insisting on four Chinese directors, while the Bank, under instructions from Paris, would only sanction three. Discussion was therefore suspended for more than 10 days. Recently the manager of the Bank at Shanghai, who is also chief representative of the Bank in the Far East, as well as a director of the railway, came to Peking and the ministry resumed negotiations with him and at two sittings the whole matter was settled and an agreement was signed on October 2. The essential features of this agreement are reported as follows:—

(1) A board of directors shall be formed on which there shall be five Russians and four Chinese (not including the director-general). The director-general appointed by China shall be chairman of the board and shall have one vote. In the event of a tie vote he shall also cast the (extra) deciding vote.

(2) Seven votes shall constitute a majority. Seven directors shall constitute a quorum, but among the seven must be either the director-general or the co-director.

(3) An additional Chinese, and an additional Russian, deputy assistant director-general shall be appointed. The offices of the general manager and other temporary high officers shall be abolished.

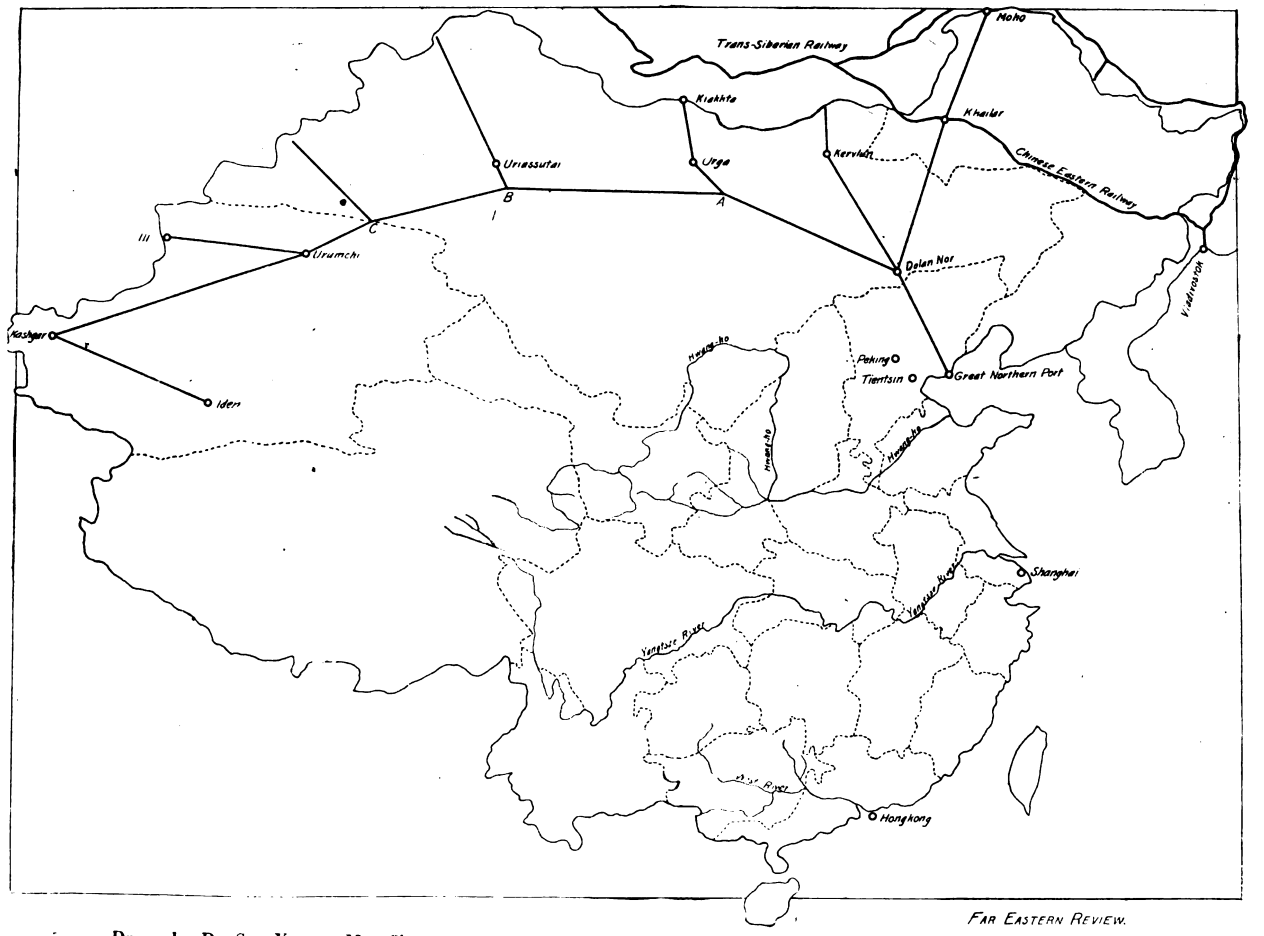
(4) A Chinese administrative vice-director shall be appointed and there shall be Chinese assistant chiefs in the bureaux of accounts, traffic, engineering, and railway guards. Chinese assistants to the chief of other administrative departments in the railway shall also be appointed. How these appointments are to be made will be decided by the board of directors.

"Regarding the return of the Tls. 5,000,000 and interest, and the appointment of Chinese in the railway inspectorate—these shall be arranged through separate agreements."

Russian Rights in China

Paris, Oct. 4.—M. de Giers, on behalf of the South Russian government, has telegraphed to the Chinese government protesting against the latter's refusal to recognize the Russian Legation and Consulates in China and pointing out that General Wrangel's government succeeds the temporary government of General Denikin and Admiral Koltchak, which was previously represented in China by diplomatic agents. He declares that the Chinese decree infringes the rights and privileges of the Russians, which are guaranteed by the Sino-Russian treaties and conventions. In conclusion M. de Giers says that Russia will not recognize any acts contrary to these treaties and will hold China responsible for any damage or loss incurred.—*Reuter.*

Japan started several cottonseed oil mills when the war broke out, and is now exporting instead of importing. In 1917 the amount exported was 1,209,551 *kin* valued at Y.209,167; in 1918 the amount was 1,834,798 *kin* valued at Y.604,163; and in 1919, the total was 2,310,840 *kin* worth Y.942,278. The export of cottonseed oil for this year is estimated to reach 2,800,000 *kin* valued at Y.1,200,000.



Drawn by Dr. Sun Yat-sen, Map Showing the Location of the Chinese Eastern Railway and its Vital Relation to Chinese Plans for the Protection of the Russo-Chinese Frontier

A Chinese Plan for Chinese Railway Development

Dr. Sun Yat-sen's Fourth Program for the International Development of China

(*Continued from October*, 1920).

This is the conclusion of the fourth part of Dr. Sun's important contribution towards the solution of China's most urgent problem. The first program was published in THE FAR EASTERN REVIEW for June, 1919. It embraced (1) the construction of a great Northern port on the Gulf of Pechihli; (2) the building of a system of railways from the great Northern port to the Northwestern extremity of China; (3) the colonization of Mongolia and Turkestan; (4) the construction of canals to connect the inland waterway systems of North and Central China with the great Northern port; and (5) the development of the iron and coal fields in Shansi and the construction of an iron and steel works.

The second program appeared in THE FAR EASTERN REVIEW for August, 1919. It comprised (1) a great Eastern port; (2) the regulation of the Yangtze channels and embankments; (3) the construction of river ports; (4) the improvement of existing canals and waterways in connection with the Yangtze, and (5) the establishment of large cement works.

The third program will be found in THE FAR EASTERN REVIEW for June, 1920. It outlined (1) the construction of the Southwestern railway system; (2) the construction of coast ports and fishing harbors; and (3) the establishment of shipbuilding yards and the necessity for a suitable standardized type of inland water vessel.

The first instalment of the fourth program appeared in THE FAR EASTERN REVIEW for October, 1920. It dealt with (1) the Central Railway System and (2) the greater part of the Southeastern Railway System.

By Dr. Sun Yat-sen, ex-President of China

THE Nanking-Kaying Line. This line starts from Nanking, proceeds to Lishui and Kaoshun and then crosses the Kiangsu border into Anhwei at Suencheng. From Suencheng it proceeds to Ningkwo and Hweichow. After Hweichow it crosses the Anhwei border into Chekiang, passing through Kaihwa, Changshan, and Kiangshan, and leaving Chekiang enters Fukien at Pucheng. From Pucheng it proceeds via Kienning for Yenping where it crosses the Foochow-Wuchang line and then goes through Shahsien and Yungan to Mingyang, where it meets the Foochow-Kweilin and Amoy-Kienchang lines. From Mingyang it proceeds to Lungyen, Yungting, then joining the Amoy-Canton line at Tsungkow proceeds together to Kaying, its terminus. This line runs over a distance of about 750 miles.

l. The Coast Line between the Great Eastern and the Great Southern Ports. This line starts from the Great Southern Port—Canton—proceeds in the same direction as the Canton-Kowloon line as far as Sheklung and then goes its own way following the course of the Tungkiang River to Waichow. From Waichow it proceeds to Samtochuck, Haifung, and Lukfung, then turning northeastward goes to Kityang and Chaochow. After Chaochow it goes to Jaoping, then crossing the Kwangtung-Fukien border to Chaoan. Thence it proceeds to Yunsiao, Changpu, Changchow, and Amoy. From Amoy it proceeds to Chuanchow, Hinghwa, and Foochow, the capital of Fukien. After Foochow it proceeds in the same direction as the Foochow-Chinkiang line, as far as Fuan, then turns eastward to Funing, and northward to Futing. After Futing it crosses the Fukien border into Chekiang and proceeds through Pingyang to Wenchow. At Wenchow it crosses the Wukiang and proceeds to Lotsing, Hwangyen, and Taichow. Thence, it proceeds through Ninghai to Ningpo, its own terminus, where it connects with the Ningpo-Hangchow line, thus linking it with the Great Eastern Port via Hangchow. This line covers a distance from Canton to Ningpo of about 1,100 miles.

m. The Kienchang-Yuanchow Line. This line starts from Kienchang and runs through Yihwang, Loan, Yungfeng, and Kishui to Kian, where it crosses the Nanking-Siuchow line. After Kian it proceeds to Yungsin and Lienhwa where it meets the Swatow-Changteh line. Thence it crosses the Kiangsi border into Hunan, at Chaling, then through Anjen to Hengchow where it crosses the Canton-Hankow line. From Hengchow the line proceeds to Paoking where it crosses line (*a*) of the Canton-Chungking Railway then westward to Yuanchow, its terminus, where it joins with the Shasi-Singyi line. This line covers a distance of about 550 miles. The total length of this southeastern railway system is about 9,000 miles.

Part III.—The North Eastern Railway System

This system will cover the whole of Manchuria, a part of Mongolia, and a part of Chihli province- an area of nearly 500,000 square miles, with a population of 25,000,000. This region is surrounded by mountains on three sides and opens on the south to the Liaotung Gulf. Amidst these three mountain ranges lies a vast and fertile plain drained by three rivers—the Nonni on the north, the Sungari on the northeast, and the Liaoho on the south. This part of China was once regarded as a desert, but since the completion of the Chinese Eastern Railway it has been found to be the most productive soil in China. It supplies the whole of Japan and a part of China with nitrogenous food in the form of soya bean. This bean, the wonderful properties of which were early discovered by the Chinese, contains the richest nitrogenous substance among vegetables and has been used as a meat substitute for many thousand years. Vegetable milk is extracted from this bean, and from this milk various kinds of preparations are made. The extraction from this bean has been proved by modern chemists to be richer than any kind of meat. The Chinese and the Japanese have used this kind of artificial meat and milk from time immemorial. Recently food administrators in Europe and America have paid great attention to this meat substitute, while the export of soya bean to Europe and America has steadily increased. This Manchu-Mongolian plain is destined to be the source of the world's supply of soya bean. Besides soya bean, this plain also produces a great quantity of various kinds of grains, and supplies the entire Eastern Siberia with wheat. The Manchurian mountains are exceedingly rich in timber and minerals—gold being especially found in great quantities in many localities.

Railway construction in this region has proved to be a most profitable undertaking. At present there are already three railway systems tapping this rich country, viz., the Peking-Mukden line, the best paying railroad in China, the Japanese

South-Manchurian Railway, also a very remunerative line, and the Chinese Eastern Railway, the best paying portion of the whole Siberian system. Besides these, there are many lines projected by the Japanese. In order to develop this rich region properly a network of railways should be projected.

Before dealing with the separate lines of this network of railways, I should like to propose a centre for them, just as the spider's nest is to a cobweb. I shall name this central city "Tungchin," the Eastern mart, which should be situated at a point southwest of the junction of the Sungari and Nonni rivers, about 110 miles west by south from Harbin, and will be in a more advantageous position than the latter. This new city will be the centre not only of the railway system but also of the inland water communication when the Liaoho-Sungari Canal is completed.

With the projected city of Tungchin as a centre, I propose the following lines:

a. The Tungchin-Hulutao line.
b. The Tungchin-Great Northern Port line.
c. The Tungchin-Dolon Nor line.
d. The Tungchin-Kerulen line.
e. The Tungchin-Moho line.
f. The Tungchin-Korfen line.
g. The Tungchin-Yaoho line.
h. The Tungchin-Yenchi line.
i. The Tungchin-Changpeh line.
j. The Hulutao-Jehol-Peking line.
k. The Hulutao-Kerulen line.
l. The Hulutao-Hailar line.
m. The Hulutao-Antung line.
n. The Moho-Suiyuan line.
o. The Huma-Chilalin or Shihwei line.
p. The Ussuri-Tumen-Yalu-Coast line.
q. The Linkiang-Dolon Nor line.
r. The Chikatobo-Sansing or Ilan line.
s. The Sansing or Ilan-Kirin line.
t. The Kirin-Dolon Nor line.

a. The Tungchin-Hulutao line. This is the first line that radiates from this projected Manchurian railway centre, and is the shorter of the two direct lines that lead to the ice-free ports on the Liaotung-Chihli Gulf. It runs almost parallel to the South Manchurian Railway, the distance between the two lines being about 80 miles at the northern end, converging to 40 miles at Sinmin, and diverging again after that point. According to the original agreement with the former Russian Government, no parallel line within 100 miles was allowed to be built. But such restriction must be abolished under this new International Development Scheme for the benefit of all concerned. This line starts from Tungchin, and proceeds southward across the vast Manchurian plain by Changling, Shuangshan, Liaoyuan, and Kangping, to Sinmin in a straight line covering a distance of about 270 miles. After Sinmin, the line joins the Peking-Mukden Railway and runs on the same track for a distance of about 130 miles to Hulutao.

b. The Tungchin-Great Northern Port line. This line is the second that radiates from this railway centre direct to a deep water ice-free seaport. It starts from Tungchin, proceeding in a southwesterly direction, passes Kwangan, midway between Tungchin and the West Liaoho, and many other small settlements before it crosses the Liaoho. After crossing the Liaoho, it enters the mountainous regions of the Jehol district by a valley to Fowsin, a hsien city, and crosses the watershed into the Talingho Valley. After passing through the Talingho Valley, the line crosses another watershed into the Luan Valley by a branch of the same river. Then it penetrates the Great Wall and proceeds to the Great Northern Port by way of Yungping and Loting. The whole length of this line is about 550 miles, the first half of which is on level land and the second half in mountainous country.

c. The Tungchin-Dolon Nor line. This is the third line that radiates from the railway centre and proceeds nearly in a westerly direction across the plain to Taonan where it crosses the projected Aigun-Jehol line (Japanese), and also meets the termini of two other projected lines, the Changchun-Taonan and the Tsengkiatun-Taonan (Japanese). After Taonan, the line turns more southward by skirting along the foothills of the southeastern side of the Great Khingan range where vast virgin forests and rich minerals are found. Then it passes through the upper Liaoho Valley formed by the Great Khingan Mountain on the north, and the Jehol Mountain on the south and through the towns of Linsi and Kingpang to Dolon Nor, where it meets the trunk line of the Northwestern Railway system. This line covers a distance of about 480 miles, a greater part of which is on level land.

d. The Tungchin-Kerulen line. This is the fourth line that radiates from the Tungchin Railway centre It runs in a northwesterly direction almost parallel with the Harbin-Manchuli line of the Chinese Eastern Railway, the distance between the two lines varying from 100 to 130 miles. The line starts from Tungchin on the north side of the junction of the Nonni and Sungari rivers and proceeds westward across the Nonni River to Talai, and then turns northwestward across the plain into the valley of the north branch of the Guileli River. After entering the valley, it follows the stream up to its source, then crosses the Great Khingan Mountain watershed into the Mongolian Plain by the Khalka River, and follows the right bank of this river to the north end of Bor Nor Lake. Thence it turns direct westward to the Kerulen River, and follows the south bank of the river to Kerulen. This line covers a distance of about 630 miles.

e. The Tungchin-Moho line. This is the fifth line that radiates from this railway centre. It starts from the north side of the junction of the Nonni and Sungari rivers, and proceeds northwestward across the northern end of the Great Manchurian Plain to Tsitsiha. At Tsitsiha, it joins the projected Kinchow-Aigun line and proceeds together northwestward alongside the left bank of the Nonni River as far as Nunkiang where it separates from the other. Thence it resumes the northwesterly direction and proceeds into the upper Nonni Valley until the headwater is reached. Then it crosses the northern extremity of the Great Khingan Range to Moho, where it joins the terminus of the Dolon Nor-Moho line. This line is about 600 miles long. About a quarter of this length runs on the plain, the second quarter runs along the lower Nonni Valley, the third along the Upper Valley, and the fourth runs in mountainous but gold-bearing region, where only physical difficulties are to be expected.

f. The Tungchin-Korfen line. This is the sixth line from the railway centre. It also starts on the northern side of the Nonni-Sungari junction, and proceeds across the plain by the cities Chaotung and Tsingkang. After Tsingkang it crosses the Tungkun River, proceeds to Hailun, and then, ascending the Tungkun Valley, crosses the watershed of the Little Khingan Mountain. Thence it descends into the Korfen Valley and proceeds by Chelu to Korfen on the right bank of the Amur River. This line covers a distance of 35[illegible] miles, two-thirds of which runs on comparatively level land and one-third in mountainous district. This is the shortest line from Tungchin to the Amur River and the Russian territory on yonder side.

g. The Tungchin-Yaoho line. This is the seventh line that radiates from this railway centre. It starts from the northern side of the Nonni-Sungari junction and traverses the plain on the left side of the Sungari River by Chaochow, then crosses the Chinese Eastern Railway, and the Hulan River to Hulan. After Hulan, it proceeds to Payen, Mulan, and Tungho, then crosses the Sungari River to Sansing, now called Ilan. Thence it proceeds into the Wokan Valley and crosses the watershed by Chihsingshitse and Takokai into the Noloho Valley and passing by various villages and towns along this river to Yaohohsien, ends at the junction of the Noloho and the Ussuri River. This line covers a distance of 500 miles in very fertile country.

h. The Tungchin-Yenchi line. This is the eigth line that radiates from this railway centre. It starts from the eastern side of the Nonni-Sungari junction and proceeds in a southeasterly direction on the right side of the Sungari River to Fuyu or Petunai and various towns along the road on the same side of the river until it comes across the Harbin-Talien Railway, then turns away from the road and proceeds eastward to Yushu and Wuchang. After Wuchang, the line turning more southward, proceeds to Fengtechang and then follows the same direction to Omu. At Omu, it crosses the Mutan River, then proceeds to Liangshuichuan and Shehtauho, where it joins the Japanese

Hweining-Kirin line and proceeds together to Yenchi. This line covers a length of about 330 miles through very rich agricultural and mineral country.

i. The Tungchin-Changpeh line. This is the ninth line that radiates from the Tungchin railway centre. It starts from the south side of the Nonni-Sungari junction and proceeds in a southeasterly direction across the plain to Nungan. After Nungan, it crosses the Itung River and proceeds continuously in the same direction across several branches of the same river to Kiudaichan, where it joins the Changchun-Kirin line and proceeds together as far as Kirin. After Kirin, it goes its own way following the right bank of the Sungari River in a southeasterly direction to the junction of Lafaho River and turns southward along the same bank of the Sungari to Huatien. After Huatien, it continues in the same course up to Toutaokiang, as far as Fusang, then turns southeastward into the Sunghsiangho Valley and proceeds upward to the Changpeh Shan watershed by skirting the south side of the Celestial Lake, then turns southward following the Aikiang River to Changpeh on the Korean frontier. This line covers a distance of about 330 miles. Some great difficulties are to be overcome in the last portion of the line where it crosses the Changpeh watershed.

j. The Hulutao-Jehol-Peking line. With this line I shall begin to deal with a new group of the Northeastern Railway System which will make Hulutao, the ice-free port on the Liaotung Gulf as their centre and terminus. This, the first line, starts from Hulutao and proceeds westward up the Shaho Valley to Sintaipienmen. Thence it crosses the mountainous district through Haiting, Mangniuyingtse, and Sanshihkiatse to Pingchuan, and continues in the same direction to Jehol or Chengteh. After Jehol, it proceeds by the old imperial highway to Lwanping, then turns southwestward to Kupehkow where it penetrates the Great Wall. Thence it follows the same highway through Miyun and Shunyi to Peking. This line covers a distance of about 270 miles.

k. The Hulutao-Kerulen line. This is the second line of the Hulutao radiation. It starts from this seaport and proceeds northward through the mountainous region of Jehol by Kienping and Chihfeng. Thence, the line follows the highway across the Upper Valley of Liaoho to Chianchang, Sitoo, Takinkou, and Linsi. After Linsi, it proceeds up the Lukiako Valley and crosses the watershed at the southern extremity of the Great Khingan Mountain, through Kanchumiao and Yufuchih. Then it proceeds to Payenbolak, Uniket, and Khombukure where it joins with the Dolon Nor-Kerulen line and proceeds together to Kerulen. This line up to Khombukure covers a distance of about 450 miles, tapping a very rich mineral, timber, and agricultural country.

l. The Hulutao-Hailar line. This, the third line, starts from Hulutao and proceeds by way of Chinchow along the west side of the Talingho River to Yichow, where it crosses the Talingho to Chinghopienmen and Fowsin. After Fowsin, the line goes northward to Suitung, thence, crossing the Siliaoho to Kailu, it proceeds between the Great and Little Fish Lakes to Kinpan and Tachuan. Then it proceeds across the Great Khingan Mountain into the Oman Valley and follows the same river to Hailar. This line covers a distance of about 600 miles passing through rich mineral and agricultural land and virgin forests.

m. The Hulutao-Antung line. This, the fourth line, starts from Hulutao asd proceeding northeastward, follows the course of the projected Liaoho-Hulutao Canal, and then goes eastward to Newchwang and Haicheng. From there it proceeds southeastward to Simuchen, where it joins the Antung-Mukden line and proceeds together to Antung on the Korean border. This line covers a distance of about 220 miles. This together with the Hulutao-Jehol-Peking line will make the shortest line from Antung and beyond, *i.e.*, Korea, to Peking.

n. The Moho-Suiyuan line. With this as the first I am going to deal with another group of lines in this system. These will be the circumferential lines which link up the radii from the Tungchin centre in two semicircles, the outer and the inner. This Moho-Suiyuan line starts from Moho and proceeds along the right bank of the Amur River to Ussuri, Omurh, Panga, Kaikukang, Anlo, and Woshimen. After this point, the river bends more southward and the line follows the same bent to Ankan, Chahayen, Wanghata, and Huma. From Huma, it proceeds to Sierhkenchi, Chila, Manchutun, Heiho, and Aigun where it meets the terminus of the Chinchow-Aigun line. After Aigun, the line turns more eastward to Homolerhchin, Chilirh, and Korfen where it meets the terminus of the Tungchin-Korfen line. Thence it proceeds to Wuyun, Foshan, and Lopeh. After Lopeh, it goes to Hokang at the junction of the Amur and Sungari. At this point, the line crosses the Sungari River to Tungkiang and proceeds to Kaitsingkow, Otu, and Suiyuan where it ends. This line covers a distance of 900 miles running all its way through the gold-producing region.

o. The Huma-Chilalin or Shihwei line. This is merely a branch of the Moho-Suiyuan line. It starts from Huma and follows the Kumara River passing by the Taleitse Gold Mine and Wapalakow Gold Mine. Then it proceeds up the Kumara River in a westerly and southwesterly direction to its southern source and there it crosses the watershed into the Halarh Valley, thence descending the valley to Chilalin or Shihwei. This line covers a distance of about 320 miles running in an extremely rich gold district.

p. The Ussuri-Tumen-Yalu-Coast line. This, the second line of the outer semicircle, starts by continuing the first line at Suiyuan, and proceeds along the left bank of the Ussuri River, passing Kaulan, Fuyeu, and Minkang, to Yaoho, where it meets the terminus of the Tungchin-Yaoho line. From Yaoho, it runs parallel to the Russian Ussuri Railway on the east side of the river as far as Fulin. After Fulin, it parts with the Russian line by turning westward following the Mulingho River to Mishan on the northwestern corner of the Hanka Lake. Thence it goes to Pinganchin, turns southward alongside the boundary line and crosses the Harbin-Vladivostok line at Siusuifen Station to Tungning. After Tungning, it continues the same southward course alongside the boundary line to a point between Szetaukow and Wutaukow, then turns westward to Hunchun, and northwestward to Yenchi where it meets the projected Japanese Hweining-Kirin line. From Yenchi, it follows the Japanese line to Holung, and proceeds southwestward by the left side of the Tumen River across the watershed into the Yalu Valley, where it meets the Tungchin-Changpeh line. After Changpeh it turns westward and northwestward following the right bank of the Yalu to Linkiang, thence southwestward, still following the right bank of the Yalu, to Tsianhsien and then continues in the same direction, along the Yalu bank, to Antung, where it meets the Antung-Mukden Railway. After Antung, it proceeds to Tatungkow at the mouth of the Yalu, thence along the coast to Takushan and Chwangho, then westward through Situn and Pingfangtien to join the South Manchurian Railway at Wukiatun. This line covers a distance of 1,100 miles, which runs from end to end right along the southeastern boundary of Manchuria.

q. The Linkiang-Dolon Nor line. This is the third line of the outer semicircle of the Tungchin railway centre, and connects the radiating lines south of the centre. It starts from Linkiang at the southwestward turn of the Yalu River, and proceeds across the mountainous region passing by Tunghwa, Hingking, and Fushun, to Mukden, where it crosses the South Manchurian Railway. From Mukden, it goes together with the Peking-Mukden line as far as Sinmin, where it crosses the Tungchin-Hulutao line and proceeds northwestward through Sinlihtun to Fowsin. After Fowsin the line enters the hilly district of the upper Liaoho Valley, and proceeds to Chihfeng, after passing through numerous small villages and camping places in this vast pasture. After Chihfeng the line proceeds through the Yinho Valley by Sanchotien, Kungchuling, and Tachientse, to Famuku, thence follows the Tulakanho to Dolon Nor, covering a distance of about 500 miles.

r. The Chikatobo-Sansing or Ilan line. This is the first line of the inner semicircle which connects the radiating lines from the Tungchin railway centre on the northeast. It starts from Chikatobo on the upper reach of the Amur, and proceeds eastward and southeastward through many valleys and mountains of the Great Khingan Range to Nunkiang. After Nunkiang, it goes in a more southerly direction to Keshan, thence to Hailun, and then crosses the Sungari to Sansing or Ilan. This line covers a distance of about 700 miles, passing through an agricultural and gold-producing country.

s. The Sansing or Ilan-Kirin line. This is the second line of the inner semicircle. It starts from Sansing and proceeds

southwestward along the right bank of the Mutan River through Tauchan, Erhchan, Sanchan, and Szuchan, to Chengtse where it crosses the Harbin-Vladivostok line. Then it goes to Ninguta, after crossing over the Mutan River from right to the left bank. After Ninguta it proceeds southwestward passing through Wungcheng, Lanchichan, Talachan, and Fungwangtien, to Omu. From Omu it joins the Japanese Hweining-Kirin line and proceeds westward to Kirin. This line covers a distance of about 200 miles, along the fertile Mutan Valley.

t. The Kirin-Dolon Nor line. This is the third line of the inner semicircle in the Tungchin system. It starts from Kirin and follows the old highway westward to Changchun where it meets the termini of the Chinese Eastern Railway from the north and the Japanese South Manchurian Railway from the south. After Changchun, it proceeds across the plain to Shuangshan where it meets the Tungchin-Hulutao line and the Japanese Szupingkai-Chengkiatun-Taonan line. From Shuangshan, it crosses the Liao River to Liaoyuan, thence it traverses the vast plain, crossing the Tungchin-Great Northern Port line and goes to Suitung where it meets the Hulutao-Hailar line. After Suitung, it proceeds up the Liao Valley where it comes across the Hulutao-Kerulen line and then crosses the watershed to Dolon Nor where it ends. This line covers a distance of 500 miles. This completes the cobweb system of the projected North-Eastern Railway. The total length of this entire system is about 9,000 miles.

Part IV.—The Extension of the Northwestern Railway System

The Northwestern Railway System covers the region of Mongolia, Sinkiang, and a part of Kansu, an area of 1,700,000 square miles. This territory exceeds the area of the Argentine Republic by 600,000 square miles. Argentina is now the greatest source of the world's meat supply, while the Mongolian pasture is not yet developed, owing to the lack of transportation facilities. As Argentina has superseded the United States in supplying the world with meat, so the Mongolian pasture will some day take the place of Argentina, when railways are developed and cattle raising is scientificially improved. Thus the construction of railroads in this vast food-producing region is an urgent necessity as a means of relieving the world from food shortage. In the first program of this International Development Scheme, I proposed 7,000 miles of railways for this vast and fertile region, for the purpose of developing the Great Northern Port, and relieving the congested population of southeastern China. But this 7,000 miles of railways form merely a pioneer line. In order to develop this virgin continent properly, more railways have to be constructed. Therefore in this plan, namely, the Extension of the Northwestern Railway System, I propose the following lines:—

a. The Dolon Nor-Kiakata line.
b. The Kalgan-Urga-Tannu Ola line.
c. The Suiyuan-Uliassutai-Kobdo line.
d. The Tsingpien-Tannu Ola line.
e. The Suchow-Kobdo line.
f. The Northwestern Frontier line.
g. The Tihwa or Urumuchi-Ulankom line
h. The Gaskhium-Tannu Ola line.
i. The Uliassutai-Kiakata line.
j. The Chensi or Barkul-Urga line.
k. The Suchow-Urga line.
l. The Desert Junction-Kerulen line.
m. The Khobor-Kerulen-Chikatobo line.
n. The Wuyuan-Taonan line.
o. The Wuyuan-Dolon Nor line
p. The Yenki-Ili line.
q. The Ili-Hotien line.
r. The Chensi-Kashgar line and its branches.

a. The Dolon Nor-Kiakata line. This line starts from Dolon Nor and proceeds in a northwesterly direction, following the caravan road across the vast pasture to Khorkho, Kuoto, and Suliehto. After Suliehto, it crosses the boundary line into Outer Mongolia by the same road to Khoshentun, Lukuchelu, and Yangto. Thence it crosses the Kerulen River to Otukunkholato, and enters the hilly region where it crosses the Kerulen watershed and the Chikoi watershed. The water from the Kerulen watershed flows into the Amur, and thence into the Pacific Ocean, while the water from the Chikoi watershed flows into Lake Baikal, and thence to the Arctic Ocean. After crossing the Chikoi watershed, it follows a branch of the Chikoi River to Kiakata. This line covers a distance of about 800 miles.

b. The Kalgan-Urga-Tannu Ola line. This line starts from Kalgan at the Great Wall, and proceeds northwestward up the plateau, crosses a range of hills into the Mongolian prairie, and goes to Mingan, Boroldshi, Ude, and Khobor, where it crosses the Dolon Nor-Urumuchi trunk line. After Khobor, it proceeds across the vast and rich pasture of Mubulan, then proceeds in a straight line through Mukata, Nalaiha to Urga. From Urga, it goes into the hilly district crossing Selenga Valley to a point opposite the southern end of Lake Kos Gol, and then turns northward across a range of mountains to Khatkhyl on the southern shore of Kos Gol. After Khatkhyl, it skirts Kos Gol Lake along the western shore for some distance, then turns northwestward and westward, following the course of the Khua Kem River to a point near its exit at the frontier line, then turns southwestward up the Kemtshik Valley to its headwater, passes through Pakuo shwo, and ends at the boundary line between the Russian and Chinese territories. This line covers a distance of about 1,700 miles.

c. The Suiyuan-Uliassutai-Kobdo line. This line starts from Suiyuan in the northwestern corner of Shansi, and proceeds in a northwesterly direction across the hilly country into the Mongolian pasture to Tolibolik, where it crosses the Great Northern Port-Hami line, and the Great Eastern Port-Urga line. After Tolibolik, it proceeds in a straight line in the same direction passing through Barunsudshi to the capital of Tuchetu. Thence it continues in the same straight line northwestward to Gorida. After Gorida, it follows the caravan road to Kolitikolik where it crosses the Great Northern Port-Urumuchi trunk line. From Kolitikolik, the line turns northwestward, then westward and proceeds across many streams and valleys and passes by many small towns to Uliassutai. At Uliassutai, it crosses the B. Junction-Frontier branch of the Great Eastern Port-Urumuchi line. After Uliassutai, the line proceeds westward following the trade road, passes through Khuduku, Bogu, Durganor, and Sakhibuluk to Kobdo. Thence the line turns northwestward to Khonga, Ukha, and Clegei, then westward to Beleu and ends at the frontier. This line is about 1,500 miles long.

d. The Tsingpien-Tannu Ola line. This line starts from Tsingpien at the Great Wall, on the northern border of Shensi, proceeds through the Ordos country by Bonobalgasun, Orto, and Shinchao, and then crosses the Hoangho to Santaoho. From Santaoho, it proceeds across Charanarinula Mountain into the Mongolian prairie in a northwesterly direction to Kurbansihata where it crosses the Peking-Hami line, then it goes to Unikuto and Enkin, where it crosses the Great Northern Port-Urumuchi line. After Enkin, the line enters into a valley and watered district, proceeds northward to Karakorum, and then turns northwestward across various streams and valleys of the tributary of the Selenga River by Sabokatai and Tsulimiau. After Tsulimiau, it proceeds in the same direction across the Selenga River, follows its branch, the Telgir Morin River, up to its source and crosses the watershed into Lake Teri Nor. Then it follows the outlet of the Teri Nor to the Khua Kem River, where it ends by joining the Kalgan Urga-Tannu Ola line. This line covers a distance of about 1,200 miles.

e. The Suchow-Kobdo line. This line starts from Suchow in a northwesterly direction penetrating the Great Wall at Chiennew, and proceeds to the coal field, about 150 miles from Suchow. Then it goes to Habirhaubuluk and Ilatoli. A short way from this place the line comes across the Peking-Hami line and then proceeds to Balaktai. After this the line passes a bit of pure desert to Timenchi. After entering the hilly and watered country it proceeds to Gaskhiun where it crosses the Great Northern Port-Urumuchi trunk line. After Gaskhiun, it proceeds to Wolanhutok, Tabateng, and Tabutu where it joins the Kucheng and Kobdo highway and following it, proceeds to Kobdo, through Batokuntai and Sutai. Here the line ends, covering a distance of about 700 miles.

f. The Northwestern Frontier line. This line starts from Ili following the Urumuchi-Ili line to Santai, on the eastern side

of Zairam Lake, then proceeds northeastward by itself to Tuszusai on the west side of Ebi Lake. After Tuszusai it proceeds to Toli where it crosses the Central Trunk line, that is, the Great Eastern Port-Tarbogotai line. Thence it goes to Namukotai and Stolokaitai by passing through a vast forest and a rich coal field. From Stolokaitai, the line follows the highway and proceeds to Chênghwaszu, the capital of Altai province. Thence it crosses a mountain range by the Urmocaitu Pass into the Kobdo Valley, and follows the course of the Kobdo River to Beleu where it joins the Suiyuan-Kobdo line asd proceeds to Clegei. From Clegei, it proceeds by itself to Tabtu via Usungola and Ulamhon. At Tabtu, it joins the other line again and proceeds together to the Khua Kem River in the Tannu Ola district. It then turns eastward ascending the river to the junction of the Bei Kem and Khua Kem rivers, then starts again on its own course, following the former river and proceeds up to its source in a northeasterly direction ending at the frontier. This line covers a distance of about 900 miles.

g. The Tihwa or Urumuchi-Ulankom line. This line starts from Tihwa following the Dolon Nor trunk line to Fowkang, then proceeds by its own route almost northward through Chipichuan to Khorchute. From Khorchute, it turns northeastward and proceeds across a hilly district to Kaiche, then to Turhuta, where it crosses a branch line from Junction C. of the Great Northern Port-Urumuchi line. After Turhuta, it turns northward, proceeds up the Pakaningale Valley to Zehoshita, and then crosses the Tilikta Pass. Thence it turns northeastward proceeding across the newly cultivated country to Kobdo. After Kobdo, it proceeds through a fertile plateau, by crossing many rivers and skirting many lakes to Ulankom, where it ends by joining the Northwestern Frontier line. It covers a distance of about 550 miles.

h. The Gaskhiun-Tannu Ola line. This line starts from Gaskhiun and proceeds northeastward across a hilly and watered country through Hatonhutuk and Talangjoleu, to Pornulu. After Pornulu, the line proceeds across the Sapkhyn Valley by Huchirtu and Porkho to Uliassutai where it meets the Suiyuan-Kobdo, and the Great Eastern Port-Uliassutai lines. After Uliassutai, the line proceeds northward to a quite new country by first crossing the headwaters of Selenga, then the headwaters of the Tess River. In the Tess Valley the line crosses a vast virgin forest. After emerging from this forest it proceeds northwestward across the watershed into the Khua Kem Valley in Tannu Ola and ends by joining the Northwestern Frontier line. This line covers a distance of about 650 miles.

i. The Uliassutai-Kiakata line. This line starts from Uliassutai and runs on the track of the Gaskhiun-Tannu Ola line, until it reaches the Eder River, a branch of the Selenga. Then, turning off eastward, it begins its own course and proceeds downward following the course of the Eder River, crossing the Tsingpien-Tannu Ola line, to the junction of this river with the Selenga. There it joins the Kalgan-Urga-Tannu Ola line and proceeds together eastward in the common track for some distance until the other line turns southeastward, when this line turns northeastward following the Selenga down to Kiakata. This line covers a distance of about 550 miles, running through a fertile valley.

j. The Chensi or Barkul-Urga line. This line starts from Chensi or Barkul and proceeds northwestward across a cultivated region through Tutaku to Urkesiat. After Urkesiat, it crosses the Suchow-Kobdo line, then traverses the vast pasture on the north side of the Gobi Desert to Suchi and Dalantura. Thence it turns more northward across the Great Eastern Port-Uliassutai line, and the Dolon Nor-Urumuchi line to Tashunhutuk. After this point the line crosses the Suiyuan-Uliassutai line at Ologai and proceeds over the watershed into the Selenga Valley where it crosses the Tsingpien-Tannu Ola line at Saboktai. From here it turns eastward across a hilly and watered region to Urga. This line covers a distance of about 800 miles.

k. The Suchow-Urga line. This line starts from Suchow and proceeds by Kinta to Maumu, and then follows the Taoho or Edsina River, which waters this strip of oasis, to the lakes. Thence it crosses the Gobi Desert, where it meets the crossing lines of the Peking-Hami and the Great Eastern Port-Uliassutai railways and with them forms a common junction. From this junction it proceeds across desert and pasture lands to another railway crossing which is formed by the Suiyuan-Kobdo and Tsingpien-Tannu Ola lines, also forming a common junction together. Thence it proceeds into pasture land through Hatengtu and Tolik to Sanintalai, where it crosses the Dolon Nor-Urumuchi line. After Sanintalai, the line proceeds through Ulanhoshih and many other small towns and encampments to Urga. This line covers a distance of about 700 miles. One-third of this length is through the desert and the other two-thirds through watered pasture land.

l. The Desert Junction-Kerulen line. This line starts from the Desert Junction, proceeds northeastward to the pastural land and crosses the Tsingpien-Tannu Ola line south of Ulan Nor Lake. Thence it proceeds to the Tuchetu Capital where it crosses the Suiyuan-Kobdo line. After the Tuchetu Capital it goes across a pasture to Junction A. From Junction A. it proceeds to Ulanhutuk and Chientingche, then crosses the Kalgan-Tannu Ola line to Zesenkhana. From Zesenkhana, the line follows the course of the Kerulen River down in a northeasterly direction to the city of Kerulen, where it crosses the Dolon Nor-Kerulen line, and meets the Kerulen-Tungchin line. This line covers a distance of about 800 miles.

m. The Khobor-Kerulen-Chikatobo line. This line starts from Khobor, the crossing junction of the Dolon Nor-Urumuchi, and the Kalgan-Urga-Tannu Ola lines, and proceeds northeastward across a vast pasture to Khoshentun, where it crosses the Dolon Nor-Kiakata line. After Khoshentun, it proceeds in the same direction across a similar pasture to Kerulen, where it crosses the Dolon Nor-Kerulen line. Then it proceeds first along the right bank of the Kerulen River, then crosses to the left side, and passes along the northwestern side of Hulan Lake. After Hulan Lake, the line crosses the Chinese Eastern Railway, and the Arguna River, then proceeds along the right bank of the river to Chikatobo, where the line ends by joining the Dolon Nor-Moho and the Chikatobo-Sansing lines. This line covers a distance of about 600 miles. The first half of it runs on dry land and the second half on watered land.

n. The Wuyuan-Taonan line. This line starts from Wuyuan at the northwest bend of the Hoangho and proceeds northeastward across the Sheiten Ula Mountain and pasture to Tolibulyk, where it meets the crossing junction of three lines—the Peking-Hami line, the Suiyuan-Kobdo line, and the Great Eastern Port-Urga line. From Tolibulyk the line proceeds continuously in the same direction across a pasture to Khobor where it meets the crossing junction of the Dolon Nor-Urumuchi and the Peking-Urga lines, and also the terminus of the Khobor-Kerulen line. After Khobor the line turns more eastward and runs parallel with the boundary line of Outer and Inner Mongolia, across the Dolon Nor-Kiakata line midway to Khombukure, where it crosses the Dolon Nor-Kerulen and the Hulutao-Kerulen lines. At Khombukure the line passes to the south side of the boundary and proceeds along it to Dakmusuma, where it crosses the Dolon Nor-Kialar line. Thence it goes eastward across the Great Khingan Mountain to Tuchuan, then turns southeastward to Taonan, where it ends. This line covers a distance of about 900 miles.

o. The Wuyuan-Dolon Nor line. This line starts from Wuyuan and proceeds northeastward across the Sheiten Ula Mountain to Maomingan, where it crosses the Great Eastern Port-Urga line. Then it proceeds across the vast pasture and the Suiyuan-Kobdo line to Bombotu, where it passes over the Peking-Hami line. After Bombotu, the line turns eastward and proceeds across the Kalgan-Urga-Tannu Ola line, then goes to Dolon Nor, where it ends by joining the Dolon Nor-Mukden-Linkiang line, which forms a direct route from the upper Hoangho Valley to the rich Liaoho Valley. This line covers a distance of about 500 miles.

p. The Yenki-Ili line. This line starts from Yenki or Karashar, and proceeds northwestward across the mountain pass into the Ili Valley. It then follows the Kunges River downward, in a westerly direction, traversing a most fertile valley, to Ining and Kuldjo or Ili, the principal city of the Ili district near the Russian border, where it joins the Ili-Urumuchi line. This line covers a distance of about 400 miles.

q. The Ili-Hotien line. This line starts from Ili or Kuldja proceeds southward across the Ili River, then eastward along the

left side of the river and then southeastward and southward to Bordai. From here it turns southwestward into Tekes Valley and proceeding upward crosses the Tekes River to Tienchiao and then ascends the mountain pass. After the mountain pass the line turns southeastward, traverses a vast coal field and then turns southwestward to Shamudai, where it crosses the Turfan-Kashgar line. From Shamudai it turns southward across the fertile zone of the north side of the Tarim Valley, to Bastutalak. Then it proceeds southwestward to Hotien passing by on the way many small settlements in the fertile zone of the Hotien River which flows across the desert. At Hotien the line meets the Kashgar-Iden line. After Hotien the line proceeds upward to the highland south of the city and ends at the frontier. This line covers a distance of about 700 miles.

r. The Chensi-Kashgar line and its branches. This line starts from Chensi and proceeds southwestward along the Tienshan pasture through Yenanpoa, Shihkialoong, and Taolaitse to Chikoching, then along the Tienshan forest through Wutungkwo, Tungyenchi, Siyenchi, and Olong to Sensien, where it crosses the Central Trunk line. After Sensien it proceeds along the northern edge of the Tarim Desert through Lakesun City and Shehchuan to Hora, where it crosses the Cherchen-Koria line. From Hora the line proceeds along the course of the Tarim River, passing by many new settlements, fertile regions, and virgin forests, to Bastutakelak, where it crosses the Ili-Hotien line. Thence it goes through Pachu to Kashgar where it meets the Urumuchi-Iden line. After Kashgar it proceeds northwestward to the frontier where it ends. Attached to this line are two branches. The first branch proceeds from Hora southwestward through many oases to Cherchen. The second proceeds from Pachu southwestward along the Yarkand River to Sache and then westward to Puli near the frontier. This line including the branches covers a distance of about 1,600 miles. The total length of this entire system is about 16,000 miles. See general map.

Part V.—The Highland Railway System

This, the last part of my railway program, is the most difficult and most expensive undertaking of its kind; consequently, it must be the least remunerative of all the railway enterprises in China. So no work should be attempted in this part until all the other parts are fully developed. But when all the other parts are well-equipped with railways then railway construction in this highland region will also be remunerative, despite the difficulties and the highly expensive work in construction.

The highland region consists of Tibet, Kokonor, and a part of Sinkiang, Kansu, Szechuan, and Yünnan, an area of about 1,000,000 square miles. Tibet is known to be the richest country in the world for gold deposits. Furthermore the adjacent territories possess rich agricultural and pastural lands. This vast region is little known to the outside world. The Chinese call Tibet "the Western Treasury," for besides gold there are other kinds of metals especially copper, in great quantities. Indeed the name of the Western Treasury is most appropriately applied to this unknown region. When the world's supply of precious metals are exhausted, we have to resort to this vast mineral bearing region for supply. So railways will be necessary at least for mining purposes. I therefore propose the following lines:—

a. The Lhasa-Lanchow line.
b. The Lhasa-Chengtu line.
c. The Lhasa-Tali-Cheli line.
d. The Lhasa-Taklongshong line.
e. The Lhasa-Yatung line.
f. The Lhasa-Laichiyaling line.
g. The Lhasa-Nohho line.
h. The Lhasa-Iden line.
i. The Lanchow-Chochiang line.
j. The Chengtu-Dzunsasak line.
k. The Ningyuan-Cherchen line.
l. The Chengtu-Menkong line.
m. The Chengtu-Yuankiang line.
n. The Suifu-Tali line.
o. The Suifu-Mengting line.
p. The Iden-Gortok line.

a. The Lhasa-Lanchow line. This is the most important line of this system for it connects the capital city of Tibet—a vast secluded region with several millions of people—with the central trunk line of the country. The route which it passes through is inhabitable and is already slightly inhabited in the region between the ends of the proposed line. So it will probably be a paying line from the beginning. This line starts from Lhasa, following the old imperial highway in a northward direction and proceeds by Talong to Yarh, which lies on the southeastern side of Tengri Nor Lake. After Yarh, the line turns more eastward and proceeds across the watershed from the Sanpo Valley to the Lukiang Valley by the Shuangtsu Pass. Thence turning more eastward the line proceeds across the headwater of the Lukiang to that of the Yangtze by passing many valleys, streams, and mountain passes. Then it crosses the main body of the Upper Yangtze, which is here known as the Kinshakiang, over the Huhusair Bridge. After crossing the bridge, it turns southeastward, then eastward across the Yangtze Valley into the Hwangho Valley, where it passes through many small towns and encampments into the Starry Sea reigon. At the Starry Sea, the line passes between the lakes of Oring Nor and Tsaring Nor. Thence it turns northeastward across the southeast valley of the Zaidam region, and returns into the Hwangho Valley again. Then it proceeds through Katolapo and various towns at Dangar, now called Hwangyuan, situated near the border between Kansu and Kokonor. After Dangar, the line turns southeastward following the course of the Sining River, proceeds downward through a very rich valley and passes through Sining, Nienpai, and hundreds of small towns and villages to Lanchow. This line covers a distance of 1,100 miles.

b. The Lhasa-Chengtu line. This line starts from Lhasa and proceeds on the former imperial highway by Teking and Nanmo to Motsukungchia. Thence it turns southeastward to Giamda. From Giamda, the line turns northward, then northeastward where it proceeds through the Tolala Pass to Lhari. After Lhari the line goes in an easterly direction and passes Pianpa, Shihtuh, and many small towns to Lolongchong. Thence it crosses the Lukiang by the Kayu Bridge and then turns northeastward to Kinda and Chiamdo. After Chiamdo, the line instead of following the imperial highway southeastward to Batang, turns northeastward, following another trade route, and proceeds to Payung at the northwestern corner of Szechuan. From Payung, it proceeds across the Kinshakiang over the bridge near Sawusantusze. The line then turns southeastward, enters the Ichu Valley and proceeds downward to Kantzu on the Yalung River. Thence it proceeds to Chango and Yinker, to Badi on the Great Golden River, and Mongan on the Little Golden River. After Mongan, the line goes through the Balan Pass to Kwanhsien, and entering the Chengtu Plain, reaches Chengtu by Pihsien. This line covers a distance of about 1,000 miles.

c. The Lhasa-Tali-Cheli line. This line starts from Lhasa by the same track as the Lhasa-Chengtu line as far as Giamda. From Giamda, it proceeds by its own track southeastward, following a branch of the Sanpo River to Yulu, where this branch joins its main stream. After Yulu, it follows the left bank of the Sanpo River passing by Kongposaga to Timchao. From Timchao, the line turns away from the Sampo River and proceeds in an eastward direction to Timchong city, Ikung, Kuba, and Shuachong. After Shuachong, the line proceeds southeastward to Lima thence eastward to Menkong on the Lukiang. From Menkong, the line turns southward along the right bank of the Lukiang passing Samotung to Tantau. Then crossing the Lukiang, it proceeds across the watershed through Gaiwa village to the Lantsang (or Mekong) River, and to Hsiaoweisi beyond it. After Hsiaoweisi, it follows the river bank to the Chenghsin Copper Mine, thence it turns away from the river and proceeds by Hosi, Erhyuan, Tengchow, and Shangkwang to Tali. From Tali, the line proceeds to Hsiakwang, Fengyi, Menghwa, and then meets the Lantsang River again at Paotien. Thence it follows the left bank southward right through to Cheli, where it ends. This line covers a distance of 900 miles.

d. The Lhasa-Taklongshong line. This line starts from Lhasa and proceeds southward by way of Teking to the Sanpo River where turning eastward it follows the left bank of the river to Sakorshong. After crossing the Sanpo River to Chetang, it

proceeds southward by Chikablung, Menchona, Tawang, Dhirangjong to Taklungshong and continues farther on until it reaches the Assam frontier. This line covers a distance of 200 miles.

e. The Lhasa-Yatung line. This line starts from Lhasa and proceeds southwestward by Chashih following the former imperial highway by Yitang, Kiangli to Chushui. At Chushui, it crosses the Sanpo River over the Mulih Bridge to Chakamo on the south side, thence to Tamalung, Paiti, Tabolung, and Nagartse. After Nagartse, the line turns westward to Jungku, Lhaling, and Shachia. At Shachia, the line leaves the former imperial highway and turns southwestward again and proceeds via Kula to Yatung at the Sikkim border. This line covers a distance of 250 miles.

f. The Lhasa-Laichiyaling line and branches. This line starts from Lhasa and proceeds northwestward by Chashih following the former imperial road to Little Taking, and westward to Yangpachin and Sangtolohai. Thence turning southwestward, it proceeds to Namaling and Tangto, and crosses the Sanpo River at Lhaku. After Lhaku, the line turns westward to Shigatse, the second important city in Tibet whence it proceeds in the same direction to Chashihkang, Pangcholing, and Lhatse all on the right side of the Sanpo River. From Lhatse, a branch line starts southwestward via Chayakor, Dingri to Niehlamuh on the Nepal border. The main line, however, crosses to the left side of the Sanpo River and proceeds on the same highway via Nabringtaka to Tadum where another branch line proceeds southwestward to the Nepal border. The main line continues northwestward via Tamusa and Choshan to Gartok, thence turning westward it proceeds to Laichiyaling on the Sutlej River and ends on the Indian border. This line, including the two branches, covers a distance of 850 miles.

g. The Lhasa-Nohho line. This line starts from Lhasa and runs in the same track as line (*e*) to Sangtolohai where it proceeds by its own line northwestward to Teching, Sangchashong, and Taktung. Thence, it enters into the richest gold field in Tibet and through Wengpo, Tulakpa, Kwangkwei, and Ikar reaches Nohho, where the line ends. It covers a distance of 700 miles.

h. The Lhasa-Iden line. This line starts from Lhasa, following the common track of lines (*f*) and (*g*) to the southwestern corner of Tengri Lake, whence it proceeds by its own track northwestward by Lungmajing, Tipoktolo and four or five other small places to Sari. After Sari, the line penetrates a vast tract of uninhabited land to Pakar and Suketi. Thence crossing the mountain passes and descending from the highland to the Tarim Basin through Sorkek to Yasulakun, the line joins the Cherchen-Iden railway of the Northwestern System and proceeds on the same track to Iden. This line covers a distance of 700 miles.

i. The Lanchow-Chochiang line. This line starts from Lanchow, on the same track of the Lhasa-Lanchow line as far as southwestern corner of the Lake of Kokonor. Thence it proceeds on its own track by skirting along the southern shore of Lake Kokonor to Dulankit, where it turns southwestward to Dzunsasak. From Dzunsasak, the line proceeds in a westerly course along the southern side of the Zaidam Swamp, and passes Tunyueh, Halori, Golmot to Hatikair. After Hatikair, the line turns northwestward by Baipa, Nolinjoha, to Orsinte. Thence turning more northward, it proceeds across the mountain range by Tsesinvitusik and Tuntunomik to Chochiang, where it ends by joining the Ansi-Iden and Chochiang-Koria lines, covering a distance of 700 miles.

j. The Chengtu-Dzunsasak line. This line starts from Chengtu and proceeds to Kwanhsien on the track of the Lhasa-Chengtu line, thence northward on its own track by Wenchuan, to Mauchow. Then, it proceeds northwestward following the course of the Minkiang to Sungpan. After Sungpan, it ascends the Min Valley passing Tungpi to Shangleyao, where it crosses the watershed from the Yangtzekiang side to that of the Hwangho. Thence the line proceeds to Orguseri, and following a branch of the Hwangho to the northwestern turn of its main stream, it proceeds along its right bank via Chahuntsin to Peilelachabu. There it crosses the Hwangho to the northwest turn of the old imperial road, where it joins the Lhasa-Lanchow line and proceeds as far as Lanipar. Then turning northwestward, it proceeds by its own line to Dzunsasak, where it ends by joining the Lanchow-Chochiang line. This line covers a distance of 650 miles.

k. The Ningyuan-Cherchen line. This line starts from Ningyuan and proceeds in a northwestward direction via Hwaiyuanchen to the Yalungkiang. Then it ascends along the left side of that river to Yakiang, and crossing to the right side of that river it proceeds by the old post road to Siolo, where it turns away from the river and follows the same post road to Litang. From Litang it proceeds in the same direction but follows another road to Kangtu, on the left side of the Kinshakiang. Following the same side of the river, it proceeds to Sawusantusze, where it crosses the Lhasa-Chengtu line. After Sawusantusze, the line continues in the same direction and follows the same side of the Kinshakiang via Tashigompa, to Huhusair Bridge, where it crosses the Lhasa-Lanchow line. Then following a northern branch of the Kinshakiang to its source and crossing the watershed, it proceeds along the caravan road by Hsinszukiang and Olokung to Cherchen, where it ends, covering a distance of about 1,350 miles. This is the longest line of this system.

l. The Chengtu-Menkong line. This line starts from Chengtu and proceeds southwestward by Shuangliu, Hsintsin, Mingshan, to Yachow. From Yachow, it turns northwestward and proceeds to Tienchuan, then westward to Tatsienlu, Tunyolo, and Litang. After Litang, the line proceeds southwestward through Bamutang, Yakalo to Menkong, covering a distance of about 400 miles of very mountainous country.

m. The Chengtu-Yuankiang line. This line starts from Chengtu on the same track of the Chengtu-Menkong line, proceeds to Yachow and thence by its own track in the same direction via Jungching, to Tsingliu. After Tsingliu, the line proceeds southward through Yuehsi to Ningyuan, where it meets the head of the Ningyuan-Cherchen line. After Ningyuan, it goes to Kwaili, then crosses the Kinshakiang to Yünnanfu where it crosses the Canton-Tali line. From Yünnanfu, it proceeds along the west side of the Kunming Lake to Kunyang, and through Hsinshing, Hsingo, to Yuankiang, where the line ends by joining the Canton-Szemo line. It covers a distance of about 600 miles.

n. The Suifu-Tali line. This line starts from Suifu and proceeds along the left bank of the Yangtzekiang, to Pingshan and Lupo. After Lupo, it turns away from the river in a southwesterly direction and scales the Taliangshan Mountains to Ningyuan, where it crosses the Chengtu-Yuankiang line and meets the termini of the Canton-Ningyuan line and the Ningyuan-Cherchen line. Thence continuing in the same direction, it crosses the Yalungkiang to Yenyuan and Yungpeh. After Yungpeh, the line turns more southward, across the Kinshakiang to Tsuchuan and thence to Tali, where it ends by meeting the Canton-Tali line and the Lhasa-Tali line. It covers a distance of about 400 miles.

o. The Suifu-Mengting line. This line starts from Suifu on the same track as the Suifu-Tali line as far as Lupo. From Lupo, it goes on its own track across the Yangtzekiang, here known as the Kinshakiang, and follows the right side of that river upward to its southward bent where it crosses the Chengtu-Yuankiang line, to Yuanmow. From Yuanmow, it proceeds to Tsuyung, where it crosses the Canton-Tali line, thence to Kingtung. After Kingtung, it proceeds southwestward across the Lantsangkiang od Mekong River, to Yunchow, thence turning southwestward, it follows a branch of Lukiang River to Mengting and ends on the frontier. This line covers a distance of about 500 miles.

p. The Iden-Gortok line. This line starts from Iden, and proceeds southward along the Keriya River to Polu, thence following the caravan road up the highland to Kuluk. From Kuluk, it proceeds southwestward via Alasa, Tunglong to Nohho, where it meets the terminus of the Lhasa-Nohho line. After Nohho, it skirts around the eastern end of the Noh-tso Lake to Budok and proceeds southwestward to Demchok, on the Indus River. From Demchok, it proceeds southwestward following the Indus River up to Gortok, where it ends by joining the Lhasa-Laichiyaling line. This line covers a distance of about 500 miles. This highland system totals about 11,000 miles.

Part VI.—The Establishment of Locomotive and Car Factories

The railways projected in the Fourth Program will total about 62,000 miles; and those in the First and the Third Programs about 14,000 miles. Besides these, there will be double tracks in

the various truck lines, which will make up a grand total of no less than 100,000 miles, as stated in the preliminary part of these programs. With this 100,000 miles of railways to be constructed in the coming ten years, the demands for locomotives and cars will be tremendous. The factories of the world will be unable to supply them, especially at this juncture of reconstruction after the great world war. So the establishment of locomotive and car factories in China to supply our own demands of railway equipment will be a necessary as well as a profitable undertaking. China possesses unlimited supplies of raw materials and cheap labor. What we need for establishing such factories is foreign capital and experts. What amount of capital should be invested in this project, I have to leave to experts to decide.

I suggest that four large factories should be started simultaneously at the beginning—two on the coast and two on the Yangtze. Of those on the coast, one should be at the Great Northern Port, and the other at the Great Southern Port—Canton. Of those on the Yangtze, one should be at Nanking and the other at Hankow. All four are in centres of both land and water communication, where skilled labor can easily be obtained. They are also near our iron and coal fields. Besides these four great factories, others should be established at suitable centres of iron and coal fields when our railways will be more developed.

All the factories should be under one central control. The locomotives and cars of our future railways should be standardized so as to make possible the interchange of parts of machinery and equipment. We should also adopt the standard gauge, that the 4-ft. 8½-in. gauge, which has been adopted by most of the railways of the world. In fact, almost all the railways hitherto built in China are of this gauge. The purpose of the proposed standardization is to secure the highest efficiency as well as the great economy.

The Wild Men of Borneo

PROBABLY the most interesting account ever written of the wild men of Borneo—the Dyaks who have defied attempts to tether them to western civilization—comes from the pen of a contributor to the *Eastern Illustrated Review*. Head-hunting, we are told, survives despite official prohibition. The Dyak suitor, "especially a chief that seeks the hand of a fair maiden must give to her convincing proof of his bravery by bringing a fresh human head. The solemn ceremony of putting off the mourning for a dead chief demands a human head. When a harvest is completed to propitiate the evil spirits a head is surely wanted. For does not this practice bring to the household, and to the community in general the purest of blessings, health and wealth?"

Dyak Man and Wife in Gala Dress

"Table Manners" among these wild folk are deliciously primitive. This is how they do it:—

"On all ordinary occasions, the family eat together usually only twice a day morning and evening in the family room. In the centre of the room is placed a large wooden dish piled high with boiled rice, and then as a plate for each member of the family is set, a piece of fresh banana leaf whereon are a little salt and a small quantity of powdered dried fish highly odorous. This is the usual bill of fare, but it may be supplemented with a sort of mush or stew of fern froud sprouts and rice or with boiled caladium roots and roasted mild yams. When there is a feast, and guests from neighboring houses come to dine, the meals are spread, and the menu is enlarged with pork and chicken, cooked in joints of bamboo, which have been stoppered at both ends with green leaves, and put in the fire until they are burnt through, when the cooking is done to a turn.

"All hands are plunged into the common dish of plain boiled rice, and it is excellent form to cram and jam the mouth as full as it will hold. They extract samsoo from the palm but seldom drink it. Their principal luxury consists in the chewing of betel-nut and lime. This habit is anything but becoming as it renders the teeth quite black, and the lips of a high vermilion."

Here is a peep at the wild women of Borneo:—

"The women, especially the mountain girls, if not beauties, have many most beautiful points; and at all events are very interesting and pretty. They have good eyes, good teeth and good hair. They are affable and of good manners. They are, however, very scantily dressed. The dress consists of a petticoat (kain) drawn lightly round the waist, and reaching to the knee, and in addition a klambi or jacket worn when out of doors. They wear finger rings, ear-rings and bracelets. They bore the lobes of ears, both men and women, and these elongated lobes with a weight of heavy ear-rings hang far below the neck in the case of women. The women consider blackening of the teeth as a beauty. Sometimes the teeth are filed concavely in front or are filed down till almost level with gums. Another curious way of treating the front teeth is to drill a hole in the middle of each tooth, and fix in it a brass stud."

"In the matter of marriages they have a curious custom. Having nothing like privacy in day time, the young man who wooes a girl, goes to her house in the night. She generally sleeps in a separate room, and the man-in-love enters the room, when the members of the girl's household are asleep, and wakes up the girl, and offers sireh. The girl if she likes to marry this man accepts the sireh; if she does not, she curtly dismisses him, and the man has to try his chances on some other girl. When the girl likes, she permits her lover to pay nocturnal visits every day or as often for two or three hours a night or even till just before daybreak for several weeks together. When the parents come to know of this, and agree to the choice their daughter has made, they keep quiet. Then the man and girl live in such intimate terms during this courtship as if they were really married, and this, as they say, is to ensure progeny, for every Dyak likes to be a father. As soon as the signs of pregnancy manifest themselves, marriage of the parties is arranged, and generally the husband goes, and lives in the wife's house. Before formal marriage girls are loose, and can be in the best of terms with the young men of her choice. Once a girl is betrothed but not married, the man pays the nocturnal visits just to see, if the marriage would be fruitful. If the woman does not conceive, the man chooses another girl, and there is no shame to another man if he wooes the same girl. For, marriage

Engineering, Financial, Industrial and Commercial News

RAILWAYS, NEW LINES, SUPPLIES, ETC

Railway Sleeper Contract.—The Chiyoda Company of Toyama were the successful bidders for the supply of sleepers for the new tramway under construction in Toyama prefecture. The price for 16,660 ties was Y.38,318.

Plant for Canton-Hankow Line.—The Canton-Hankow railway has ordered 12 new heavy locomotives (eight for freight and four for passengers), and is about to order 90 large freight cars (30 of 30 ton size and 60 of 40 ton size).

Japan's Railway Construction Program.—Japan's railway construction program approved at the last session of the Diet covers a period of ten years and embraces the construction of 76 new lines at an estimated cost of Y.579,818,000. Forty-eight of these are to be light railways estimated to cost Y.225,000,000. Main lines number 28, estimated to cost Y.355,000,000. The program for the present financial year calls for the construction of 25 new sections aggregating 284 miles at a cost of Y.59,000,000. Three of these sections, 17.3 miles in length, have been completed and opened to traffic, four more will be completed in October and another four in November. The total mileage of these 8 new sections is 84.5. The remaining 180 miles of new lines to be constructed during the present fiscal year are expected to be in operation by March. The maintenance estimates for the 926 miles of old lines will be carried out despite the falling off in revenues, estimated at Y.17,000,000 during the fiscal year. Half of this will be recovered by retrenchment and the other half from the surplus of last year. The credit of Y.55,000,000 authorized by the Diet for this year's maintenance will be found and expended according to program.

New Railway Yard, Nagoya.—The Railway Department has appropriated Y.700,000 for the purchase of 250,000 *tsubo* of land required for the construction of the new freight yards near Nagoya. The yard will be laid out to conform to the Haup system and located on the east side of the present Inazawa station and will be five miles in length and 750-ft. wide. Two locomotive houses will be erected.

New Private Railway, Japan.—The Sagami Tramway Company, Limited, is pushing ahead the construction of the line from Chigasaki-machi to Hachiiji City. The Kagawa Station is completed and the Samukawa station nearing completion. Ten miles of rail have been purchased for the extension to Otsugi and two locomotives obtained from the Railway Department. It is expected that the first section of the line will be opened to traffic in November.

Four Track Kobe-Osaka Line.—The work in enlarging the existing railway between Kobe and Osaka into a four-track line is going steadily ahead. The preliminary work between Higashinada and Ashiya, covering 5½ miles, is finished, while in the section between the Noda Signal Station, near Kanzaki, and Higashinada the buying of necessary land has been completed, and the work is being extended to the east from Higashinada. The completion of the quadruple track will be followed by that of the overhead railway line in Kobe.

Japan's Delegate to Paris Conference.—The Japanese government has appointed Dr. Sango Satake, lately of the Railway Department, as one of Japan's commissioners at the International Communications Conference at Paris.

South Manchurian Railway Depression.—According to reports published in Japanese papers, the S.M.R. Company anticipates a decrease of at least 20 per cent. in its revenues as a result of the depression, but it is said that the bulk of this decrease will be made good by the discharge of superfluous employees and other economies. The railway receipts up to September 11, show a decrease of Y.2,459,358 under the estimates, while the subsidiary enterprises have suffered a decrease of revenues of 20 to 40 per cent. The estimated revenues of the company for the current year (Y.200,000,000) are expected to be reduced to Y.160,000,000.

New Railway Extensions Completed.—The following extensions or new lines in Hokkaido will be opened for traffic by the Railway Department within the next two months: Nayori Line, 14 miles between Shimokawa and Kamibe; and 33.6 miles between Nakayubetsu and Okotsu: Soya Line, 10 miles between Asagino and Onishibetsu: Nemura Line, 21.6 miles between Atsutoko and Wada.

Proposed Cable Tramway, Kobe.—The Improvement Committee of this port advocate the opening of a new residential district at Shiogahara near the Futatabi Hill and to connect the district with the city by a cable tramway which is estimated to cost Y.1,700,000.

New Line Opened, Japan.—The Boseki Railroad Company opened for traffic on September 23 the new line between Nami and Hasi, a distance of about five miles.

New Line Opened, Korea.—Another section of the Kankyo line in Korea, from Kinjo will be opened to traffic on October first. Construction of this line was started in July 1918 and concluded July, 1920.

Heijo-Gensan Railway.—The construction of the Heijo-Gensan (Pyongyang-Wonsan) railway has been definitely decided. It will start from Heijo (Pyongyang), traversing several market places along the Mozan (Maingsan) route such as Shajinjo (Sainchang), Zisan (Chasan), and Inzan (Eunsan), till it reaches the town of Sinsori (Sinchangli). Thence the route will turn to the right as far as Kiso (Kichang) in Tongchon District. From Kiso the railway will pass along the bank of the Pulsei River and penetrate the mountain regions. From Sekiso (Sakchang) the railroad will proceed along the Hei-gen (Pyongyang-Wonsan) highway as far as Jun-u (Syunoo), traversing *en route* Paeup; when the route will diverge to the left, go through the Katchalyang hill district down to the Yutu river basin till it reaches Kwanhei (Byongpyong), from this place it will turn to the right as far as Kogen (Kangwan), the terminus of the railway going over the craggy mountain path of the Tolyang parallel with the Tokchi river on the way to Jonairi (Songnaili).

The railway will be 132½ miles long and the total cost of construction is estimated at Y.52,000,000. This enormous figure demonstrates the great difficulties with which the construction of the railway is expected to be attended. About sixty tunnels (aggregating over 69,000 feet in length) are included in the work, of which the tunnels through Mt. Kotchalyong and Mt. Tolyong will each measure more than a mile. The steepest grade of the line will be 1/80. A bill for the project is arranged to be included in the budget of the next fiscal year. If it passes, the work will be commenced from 1927. The work will be started both from Heijo and Kogen (Kangwan), the lines finally being connected. The South Manchuria Railway Company will undertake the construction.

Building Locomotives for Japan.—The manufacture of locomotives has been undertaken for the first time by the Matsukasado Dockyard, Yamaguchi-ken, under the management of the Kuhara firm. In the course of this year, 12 engines are expected to be constructed. Hitherto, only the Kawasaki Dockyard and the Osaka Train Company were engaged in this work in Japan.

Hamatsu Railway Shops.—The Railway Department will erect a large foreign style building at their Hamatsu Works, to be used as a hall, library, gymnasium and general entertainment building.

Canton-Hankow Railway Loan.—The Chinese government purposes to raise the necessary funds to construct the Chuchow-Hengchow section on the Canton-Hankow Railway for a distance of 48 miles. The cost of construction is estimated at $13,900,000.

Japanese Railway Program.—The construction program of the Railway Department for the next ten years provide for 28 main lines with the expenditure of Y.354,951,576 and 48 light railways involving a cost of Y.224,866,798, making a total expenditure of Y.579,818,374. This program comprises an additional estimate of Y.64,880,000 for the establishment of 5 lines and Y.153,810,000 for the establishment of 21 light railways, which was approved by the recent extraordinary session of the Diet.

Rolling Stock, Japanese Government Railways.—The railway authorities have been contemplating the reconstruction of the third-class carriages for long distance travel, for some time, but owing to the many suggestions made, actual work began only recently. For that reason there are only a few such carriages available for the Tokaido line. Railway officials hope to put these new coaches on all the lines throughout the country within the current year. In the new coaches the seats are considerably wider while every seat is so made that it can be converted into a sleeping berth, for use at the cheap price of 30 sen. The plans of the Railway Department for 1919 called for the construction of 346 passenger cars, of which 230 have been completed, and 61 electric passenger coaches of which 26 have been finished. The plans for 1920 call for 337 passenger coaches, of which 83 are com-

pleted, and 1,453 freight cars which are being turned out as rapidly as possible.

Korean Railway Operating Loss.—A rough estimate of the loss on the year's working of the Korean Railways is Y.5,800,000. It is hoped to save Y.5,000,000 and bring this down to Y.800,000 by reducing the number of employees and effecting an economy in coal.

Nationalization of the Chuitsu Railway.—The Railway Department has completed its arrangement for the purchase of the Chuitsu Railway at a cost of about Y.7,000.000, and will issue a domestic loan for this purpose.

New Line Opened.—The Noitsu Railway in Gifu Prefecture has been completed and will be opened for traffic on October 19.

Private Railways Demand Compensation.—The construction program of the Japanese government in conflicting with the lines of some of the private companies, has resulted in demands for compensation on the part of three of these companies. The Odawara Electric Railway Company, operating the line between Kozu and Odawara is paralleled by the new government line has asked for damages. The Light Railway Company operating a line 12 miles in length between Kurozawajiri and Iwasaki, Iwate Prefecture, requests the government to buy its line because of similar competition and the Tone Tramway Company which operates a light railway between Shibukawa and Numada, Gumma Prefecture, of 13 miles in length, also requests the government to take over its line. The Railway Department is considering how these demands may be met in compliance with the law providing for the protection of private railways.

To Start Construction of New Lines, Peking.—Reuter tells us that Mr. Kong Shih-to, a member of the House of Representatives, editor of the *Min Su Pao* and treasurer of the International Press Club, has decided to construct the Tsangchow railway as a means of providing constructive employment to sufferers from the famine.

It is also decided to proceed with the Chefoo-Weihsien railway before the end of the year. Mr. Chow Teh-san, the engineer-in-chief of the Tsinpu railway, has been appointed chief engineer of the Chefoo-Weihsien railway.

New Private Railway, Japan.—The Japan Woollen Manufacturing Co., Ltd., has applied for a permit to construct a private tramway from Hoden station on the Sanyo main line to their works, a distance of two miles.

Peking-Suiyuan Loan Terms.—The terms of the short term loan for the construction of the Cho-Tze section of the Peking-Suiyuan railway are: The amount of the loan is one million silver dollars: flotation begins from the 1st instant and concludes on December 31 next: interest on the bonds will begin from the date of payment of subscriptions and will be paid monthly until December 31 at the rate of 7½ per cent. per annum. The period of the loan is one year, January to December 1921. After December 31 next interest will be paid in half-yearly instalments. $90,000 will be paid monthly from the revenues of the Peking-Suiyuan railway as security for the loan.

Japanese Railway Bond Issue.—The Japanese government announces a railway bond issue amounting to Y.20,000,000 bearing interest at 5 per cent. The bond will be put on sale on November 1 next and continue until November 11.

Proposed Harbin-Heilungchiang Railway.—Consul-General Pontius reports from Mukden that the Peking government, with a view to facilitating communication, has proposed to build a railway between Harbin and Heilungchiang. Though it is maintained by the three governors of Manchuria that funds for the purpose should be raised by the eastern provinces, it is suggested that foreign loans are necessary for the consummation of the plans. —*Daily Commerce Reports.*

Railway Construction, Siam.—The extension of the Siamese Northern Railway, which has been in progress for several years, was hindered during 1919 owing to the difficulty of getting rails and other materials from abroad, but the embankments for the extension have been completed up to the city of Chiengmai. The southern line was completed and joined up with the British railway system of the Federated Malay States and international traffic was inaugurated on the west coast in the fiscal year 1917-18. During 1918-19 the embankments on the east coast branch of this line were completed up to the Kelantan frontier. On the Siamese Eastern line an extension toward French Indo-China is also under consideration with the object of linking up with new lines extended from the later country, and eventually it is hoped to establish through railway connections between Bangkok and Saigon. The surveys for this purpose are already in progress and are to be completed within two years' time. A number of Siamese students are being sent each year to the United States to study railway engineering and management. Under the efficient directorship of the Commissioner General of the State Railways, modern methods are rapidly being introduced and the entire workings of the railways will eventually be unified, and in due time the standard-gauge portions of the railways may be converted into meter gauge so that it will be possible to run trains through to Rangoon and Burma, and Saigon, Indo-China. The 24-hour notation of time and the metric system of weights and measures are used on all the State railways in Siam.—U.S. Commerce Reports.

ELECTRIC LIGHTING, TRACTION, POWER, ETC.

New Electric Manufacturing Company.—The Kobe Electric (Ball?) Company, Ltd., has opened a branch in Shidzuoka City. The capital of the concern is Y.600,000. It manufactures machine tools and electrical supplies. The managing director is S. Mochizuki of Shidzuoka.

Electrical Amalgamation.—The Nagoya Electric Light Company, at a meeting held on October 25, will consider the proposition to amalgamate with the Gifu Electric Company.

American Electric Plant and Water System for Kulum.—According to a vernacular newspaper, influential Mongolians at Peking are negotiating with the China-American Trading Co. with a view to installing an electric plant and water system in Urga.

Nationalization of Electric Plants.—In view of the popular demand for the nationalization of the electric plants, the minister of communication has ordered the immediate investigation of the water power situation in the country. A nationalization bill was introduced at the last session of the diet, but failed to pass.

Hydro-electrical Plants in Japan.—Although the slump in industry will retard the completion of the hydro-electric plants now under construction in Japan, Commercial Attaché James F. Abbott, of Tokyo, believes that some half-a-dozen new plants will be producing by 1925. It is stated that the Tonegawa should be producing 10.000 kilowatts in 1922 and the Inawashire 20,000 kilowatts in 1923. —*Daily Commerce Reports.*

New Hydro-Electric Projects, Japan.—The Nagoya Electric Company is interested in a scheme to construct a hydro-electric plant on the Yahagi River in Aichi Prefecture, utilizing a head of 420 feet from which it is expected that 2,000 kilowatts can be obtained. The application of the Sagami Electric Power Company to utilize the water of the Aciyama River for a hydro-electric plant, was granted on September 24. The estimated cost of the plant is Y.237,000.

Osaka Electric Light Company.—This company, after its failure to sell its plant to the city, has decided to double its capital to Y.43,200,000 and demand from the city the necessary permit for the increase.

Electrical Enterprises, Japan.—The government statistics show that up to the end of July, 1920. there were 778 electrical enterprises in Japan, capitalized at Y.1,218,390,961, of which 685 companies furnish light and power, 41 operate electric tramways and 53 light, power and tramways. The above includes hydro-electric plants in operation aggregating 502,285 kilowatts, and 180,313 kilowatts generated by steam. Under construction are 459,207 kilowatts hydro-electric installations and 161,743 kilowatts in steam generated plants. Compared with the end of last year this shows an increase of Y.123,360,888 in capital and 40,514 in kilowatts. During the month of July six new enterprises capitalized at Y.675,000 were organized. During the same period four new plants capitalized at Y.475,000 commenced operations, while twelve small installations aggregating 4,276 kilowatts were under way.

Vladivostok Electric Light and Tramways.—A recent report states that the Mitsubishi Company has secured from the Vladivostok government the right to operate the electric railways and supply light in that city. The fact that the Vladivostok government has conceded such rights to a private concern testifies to the financial embrassment of the Vladivostok government.

It is stated that when the government decided on the sale of the concession a keen competition arose between the Mitsubishi and a Russian subject named Kogan, in which the Japanese company came out successfully due to the activities and efforts of Mr. Kyoji Yamanouchi, manager of the Vladivostok branch of that company. Having secured the rights which will greatly add to the economic and commercial influence of the Japanese company, the company is formulating a business plan for putting its acquired rights into execution and extending its business influence in Vladivostok with Mr. Yamanouchi as the head of the committee specially designated for the purpose.

Keijo Electric Company, Korea.—This company has called up the third installment in its capital of Y.600,000, on December 1st.

New Tawa River Hydro-Electric Plant Proposed.—At a meeting of the shareholders of the Kinugawa Hydro-Electric Company held at Tokio on October 1st, it was decided that if the municipality decided to utilize the water power of the lower Tawa River, the company would transfer their activities to the upper reaches of the same river and erect a new hydro-electric plant of 10.000 kilowatts at a cost of Y.18.000,000.

Takasago Electric Supply.—Electrical current for Takasago, formerly supplied by the Akashi Electric Company, since February of this year has been obtained at a much lower rate from the Harima Hydro-Electric Company, resulting in a great increase of motors for industrial establishments. In one month the income was increased

The quantity of iron ore and coal is as follows :—

Year	Iron Ore Metric Tons.	Coal Metric Tons.
1920...	3,709,000	6,040,000
1921...	3,978,400	6,473,200
1922...	4,247,800	6,906,400
1923...	4,517,200	7,339,600
1924...	4,786,600	7,772,800

* * *

ARMOR PLATE ORDER, JAPAN.—According to a London dispatch to the *Jiji*, a British firm at Sheffield will enter into a contract with the Japanese government for the supply of 5,000 tons of steel to be used for the building of one of the biggest dreadnoughts in Japan.

* * *

GOVERNMENT AID TO STEEL INDUSTRY, JAPAN.—Baron Yamamoto, the Minister of Agriculture and Commerce, says that the government, while realizing the necessity of protecting the home steel industry, does not necessarily approve of the amalgamation of private ironworks, of which the Extraordinary Economic and Financial Society seems to be in favor. It is still undecided as to how the industry ought to be granted protection. The Minister expresses his inability to foretell when the prevailing economic panic will disappear, but is of opinion that it will last for some time, in view of the present conditions in the world.

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AMERICAN MARKET CONDITIONS.—With improved railroad traffic conditions, price premiums obtained for iron and steel products have been fading away. Due to better mill shipments and increased production, material has been more plentiful and actual or feared shortages have been relieved. Quotations gradually have been tending downward toward the levels which have been maintained by the leading interest for the past 18 months, although this tendency is more pronounced in some lines than in others. In practically every line, however, buyers have adopted a waiting attitude, placing orders only for urgent requirements. Both plates and shapes have been in light demand for some months, owing to the lack of shipbuilding orders and of new construction generally. Now, bars also have slumped somewhat in price, due to the falling off in demand from agricultural implement makers, some of whom are operating on as low a basis as 60 per cent. Some heavy cancellations of steel bars have been received by bar mills. Semi-finished materials, such as sheet bars and billets, also have experienced price reduction. Some weeks ago sheet bars destined to be rolled into highly finished sheets for the automobile industry sold as high as $90 per ton, but with the slump in automobile buying, prices have declined, and sheet bars sold recently at $60 per ton. In wire products, pipes, tin plate, and small bars the mills have as much business as they can handle and prices are being maintained on these products. New buying of pig iron has been almost at a standstill and prices have been dipping a little. However, the blast furnaces still have plenty of business on their books for some months yet and competition for business, therefore, has not been keen. Because of unfavorable exchange the export demand has continued slow and there have been many cancellations of export orders, with the result that resale materials have been thrown on the market in this country. Pig iron production is being well maintained, the total for the 30 days of September having been 3,124,994 tons, as against 3,145,536 tons in the 31 days of August. —*Market Report of the First National Bank of Boston.*

* * *

MINAMI TOKAI IRON MANUFACTURING CO.—This concern, whose works are located at Fuji, has appointed Mr. F. Sano as managing director, and employed a new chief engineer from Osaka, for the purpose of enlarging and improving the efficiency of their plant.

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NEW MACHINERY WORKS, NAGOYA.—The Uchiyama Iron Works which has been operating as a partnership has been organized into a limited liability company with a capital of Y.100,000. An expansion of the works is to be made.

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SHINOHARA IRON WORKS.—The Company was organized for general foundry and machine works. Office: 26 Shichichome Tani-machi, Minami-ku, Osaka. Manager, Naosaburo Taniguchi.

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NEW IRON WORKS, JAPAN.—The Hokujo Foundry of Hokujo-machi, Hyogo, has been converted into a limited company capitalized at Y.300,000. Mr. S. Matsumoto has been appointed managing director The company specializes in heavy castings and agricultural machinery.

Pity the Poor Manchus!

Bankrupt Peking Republic Has Failed to Pay Abdication Price and Now Empress and Princes Protest

PEKING, November 20.—Because the bankrupt Peking republic has failed to pay up the price stipulated by the house of Ching when the Manchus consented to abdicate, February, 1912, the empress and princes have joined in a pathetic protest to President Hsu Shih-chang. Recently, Prince Tsai-Hsu called upon the president and laid before him a long bill of grievances.

Chief among the causes of Manchu dissatisfaction is the failure of the Peking treasury to meet arrears of payment of privilege funds due to the Ching imperial house. Prince Tsai said these should be paid at an early date so as to relieve the empress of her deep anxieties. It should not be lost sight of that an amount of $4,000,000 per annum was originally promised the Ching imperial house by the republic. No efforts have as yet been made to comply with this promise fully and punctually. For this reason, great deficits are incurred by the Chings. The president was further asked to advance an urgent amount of $2,000,000. To this request, the president answered that means will be devised to comply with the desire of the empress at an early date, but that no definite promise can be made in view of the present stringency of finance confronting the Peking government.

The marriage of the boy emperor will take place early next year, and this occasion will necessitate an amount of $1,500,000. The president, one of whose daughters is to be the bride, said that General Chin Yun-peng, the premier, will be consulted before any action can be taken. Further, he advised that economy should be exercised in the marriage ceremony.

The Peking Syndicate's New Railway Agreement

REUTER learns that the Ching-Meng Railway agreement, mentioned in the railway notes of this number of THE FAR EASTERN REVIEW, authorizes a prolongation westwards of the Tao-Ching Railway from its present terminus, Chinghua, to Menghsien on the left bank of the Yellow River, immediately northeast of Honanfu, an important ferry over which the bulk of the trade between the Luanfu and Tzechow districts of Shansi and the south passes. The line, which will be about 65 kilometres in length, will pass through a highly cultivated district to which it will be of very considerable benefit by bringing it into direct communication with the main railway system of the country. The Peking Syndicate, Ld., besides being administrators and general managers of the Tao-Ching Railway, possess very large mining interests in the locality. The agreement provides for a loan for the construction of the line, the net amount of which and the conditions of its issue are to be fixed not later than three years after the date of the agreement. In the meantime the syndicate is to advance to the government sufficient funds to commence and carry on the construction of the line. Both the loan and the advances are secured, *inter alia*, by a general guarantee of the government and by a mortgage on the permanent way of the railway and its earnings of the Tao-Ching Railway.

The construction of the line will be carried out under the control of an engineer nominated by the syndicate and appointed by the director of the Tao-Ching Railway administration, who will act concurrently as director of the new line. The engineer may, with the consent of the Tao-Ching Railway administration, employ in the work of construction, any of the staff, rolling stock, plant and tools of the Tao-Ching Railway, on rates to be determined by the director of the Tao-Ching Railway and the Peking Syndicate are appointed purchasing agents for the new line and upon all materials purchased abroad they will receive a commission of 3 per cent. on the net cost thereof.

No provision is made for rolling stock, it being arranged that when the line or part of it is opened for traffic, the rolling stock of the Tao-Ching Railway shall be used on the hire basis at rates to be fixed by the director of the Tao-Ching Railway and the Peking Syndicate with the approval of the ministry of communications. The terms of the loan agreement and also the working agreement of the Tao-Ching Railway will not apply to this agreement.

A JAPANESE PHILANTHROPIST.—Mr. Jiro Harada, former Managing Director of the Konoike firm, Tokyo, has donated Y.10,200,000 to assist in public works on a far-reaching scale.

Engineering, Financial, Industrial and Commercial News

RAILWAYS, NEW LINES, SUPPLIES, ETC.

PEKING SYNDICATE LINE SANCTIONED.—A mandate was issued on November 24, sanctioning the agreement between the Chiaotungpu and Peking Syndicate for the construction of the Chinghua-Menghsien branch of the Chinghua-Taokow Railway, in Honan.

ELEVATED RAILWAY.—The engineers of the new line from Amagasaki Bay to the main Tokkaido line are encountering great difficulties in locating a right of way because of the existence of other tramways and the Ki River, and have recommended the construction of an elevated track two miles in length to cost Y. 2,500,000, which is now before the authorities for approval.

RAILWAY AGREEMENT WITH PEKIN SYNDICATE.—The contract for the construction of a branch line of the Taokowa Tsinghua Railway in Honan by the Pekin Syndicate has been signed between the ministry of communications and the syndicate.

TOKYO UNDERGROUND.—The Tokyo Underground Railroad Company has decided to start the work of construction of its first line between Shinagawa and Kaminarimon, Asakusa Park. The completion of the work will, it is estimated, require about three years. When completed, the line will bring Shinagawa-Asakusa Park within 25 minutes travelling time.

NEW ZEALAND LOCOMOTIVE CONTRACT.—The New Zealand government has accepted a tender of the North British Locomotive Co. of Glasgow for the supply of twenty-five railway locomotives to cost £12,350 each. Messrs. Cammel Laird Co. made successful tenders for two thousand five hundred railway wagons at £325 each. Tenders were also received from Canada, the United States and Germany.

NEW MOTEGI SECTION.—The Nanai-Motegi Section on the Motegi line, which is practically an extension of the present Maoka line in Tochigi prefecture, has just been completed. The total mileage of this new section is 8.4 miles. It was opened to public traffic November 15. Motegi is known for tungsten yields in its vicinity.

NEW RAILWAY STATION.—A new railway station will be constructed near the new Meiji shrine at an expense of Y.110,000.

DR. NAKANISHI RESIGNS.—Mr. Nakanishi, the vice-president of the South Manchuria Railway Company, who is suffering from acute nervous debility, has decided to resign his post. The government has not yet made its choice of his successor.

HUGE RAILWAY TUNNELLING, JAPAN.—The completion of the tunneling through the volcanic Hakone mountains to connect Odawara with Numazu by way of Atami, which is expected to be in 1924, will save the railway approximately Y.4,000,000 yearly, and lessen the trip by rail by one hour. The cost of the total work is about Y.60,000,000. Professional geologists and seismologists are in charge of the tunneling.

RAILWAY SOCIETY, KOREA.—The first meeting of the new Railway Association composed of the officials of the South Manchuria and private Korean lines was held at the Chosen Hotel at Seoul on October 24.

PRIVATE RAILWAY SUBSIDIES.—The Japanese Railway Department is expected to introduce a new bill in the Diet at the coming session for authorization to increase the subsidy to private railways. At present the law permits the government to make good any deficiency in the earnings to enable the roads to pay a dividend of five per cent. The new law will permit the payment of six per cent. dividends. The estimated subsidies under this system are Y.900,000.

CHEFOO-WEIHSIEN LINE.—The ministry of communications has donated 150,000 yuan for the construction of the Chefoo-Weihsien line, Shantung, the bed for which has been built to a distance of more than 20 *li*. The engineering department is making a request for another 150,000 yuan.

START WORK ON LUNGHAI LINE.—A party of Belgian engineers has arrived at Haichow to commence the completion of the Lunghai railway. Plans and specifications are now being prepared.

AUTOMATIC RAILWAY SIGNALS, JAPAN.—The railway department ordered 300 automatic signalling machines from the United States which arrived in Japan recently and will be installed immediately. It has been decided to install similar signals on all the Tokkaido lines at an expense of Y.1,600.000, which includes the cost of electrical generating stations. The current for the lines radiating from Tokyo will be supplied by the government power house. For the Osaka district a new 400 kilowatt power house will be erected at Suida, to cost Y.250.000. For the Kyoto district, the current will be taken from the local power company.

TOKYO SUBWAY COMPANY REORGANIZED.—The general business slump of last spring practically killed the immediate chances of successful flotation of the various rapid-transit schemes for the city and district of Tokyo. Several of these companies were in various stages of promotion and considerable progress made in raising capital and carrying out preliminary surveys, preparing estimates, etc. Amongst these were the Tokyo Subway Company, Limited, promoted by Mr. Tokuji Hayakawa, The Musashi Electric Railway Company, promoted by Baron S. Go, the Tokyo Rapid-Transit Railway Company, promoted by Mr. T. Toshimitsu and the Tokyo Railway Company by Mr. Giichi Iida. The capitalization of these companies ranged from Y.35,000,000 to Y.70,000,000. In order to carry through the first part of the subway plans the capital of this enterprise was recently reduced from Y.40,000,000 to Y.10,000,000 and sufficient capital paid in to enable registration and the commencement of work. The Tokyo Railway Company has now amalgamated with the Subway Company, which has influenced the other two promotors to resume activities. It is expected that all these enterprises will be merged into one corporation. The railway department in granting permission to operate will require complete uniformity in the equipment of all such lines to permit free interchange of traffic.

NEW SECTION OPENED.—The railway department has completed the Shigeyasu-Fukuma section on the Mine Light Railway, the Gifu-Kagamigahara section on the Takayama line and the Asachino-Kishibetsu section on the Soya line. All three sections were opened to public traffic on November 1.

KOREAN FOREST RAILWAY.—The Chosen Sangyo Tetsudo (Korean Industrial Railway), organized during the boom, has been hard hit on account of the depression. Sixty shareholders have filed an application to the board of directors to call a general meeting in order to decide on the dissolution of the Company. The *Seoul Press* adds that the dissolution of the Chosen Kogyo Railway Company, which was organized about the same time as the Sangyo and a few other railway companies, has already been determined on.

SOUTH MANCHURIA RAILWAY.—The condition of the South Manchuria Railway Company has improved through the issue of debentures, the discharge of employees and a reduction in its higher staff. According to the budget, the company was to carry on enterprises amounting to Y.70,000,000 for this fiscal year and to Y.20,000,000 brought over from the preceding year, for which the company has provided a sum of Y.50,000,000, a loan of Y.16,000,000 lent by the government, a call of Y.12,000,000 on its shares, the present issue of debentures of Y.10,000,000, and its reserve totalling Y.13,000,000. There is still a shortage of Y.40,000,000. It is expected that 30 or 40 per cent. of the enterprises, which cannot be consummated within the current financial year for unavoidable reasons, will be carried forward to the next financial year.

RAILWAY EXHIBITION, JAPAN.—The idea is gaining favor among the railway authorities of holding a big celebration next year about April or May in honor of the 50th anniversary of the opening of railways in Japan. It is also proposed that a railway exhibition should be simultaneously opened, and lectures be organized in order to diffuse knowledge concerning the good work done by railways in all directions.

LIGHT RAILWAY, SAGHALIEN.—A party of 198 military engineers and 840 coolies, who have been engaged in constructing barracks and 50 miles of light railway at Alexandrovsk, has returned to Japan. Only two-thirds of the work had been finished, the temperature of 10 degrees below zero compelling its postponement.

The new railway line is now open for the transport of cargo between Alexandrovsk and the finished point.

NEW RAILWAY SECTIONS OPENED.—The section between Nayori and Kamiobe on the Nayori Line in Hokkaido, a distance of 24.16 miles has been completed. Unusual difficulties were experienced in the construction, some of the embankments being 41-ft. in height, and earth cuts to the depth of 32-ft., in addition to four steel bridges.

JAPANESE COLONIAL RAILWAY ESTIMATES.—The

Formosan budget for 1921 exceeds Y.110,000,000, an increase of Y.16,000,000 over the present year. The increase arises from the higher costs of construction for the railway extensions and improvements. An increase of Y.2,000,000 is also provided for in the Karafuto budget for railway extensions.

CHINESE WAR LORDS TO "PROTECT" RAILWAYS!—After negotiation, Generals Tsao Kun and Chang Tso-lin have decided to divide between themselves the responsibility of "protecting" the various northern Chinese railway lines. The Peking-Hankow Railway is placed under the "protection" of the troops of the 3rd army division and the 16th mixed brigade, under the respective commands of Generals Wu Pei-fu and Feng Yu-hsiang. These troops are distributed at strategical points of the line at the discretion of their Chihli commanders. The Peking-Mukden and the Tientsin-Pukow lines are under the "protection" of the Fengtien troops of the 1st army division and the 2nd mixed brigade under the respective commands of General Chang Ching-hui and Tseng Tien-sheng, "who shall have full control of these two lines."

BRITISH SUPPORT RAILWAY BETTERMENT.—The conference of British Chambers of Commerce at Shanghai passed the following resolutions: (1) To support the efforts of the railway authorities to improve railway organization and obtain sanction for an increase of rolling stock; (2) In view of the Chinese government's efforts to standardize the railway system to commend to the consideration of British manufacturers the opinion that British railway engineering should be adequately represented in China.

NEW JAPANESE STATION, HAMAMATSU.—A new railway station and yards to occupy a total of 23,000 *tsubo* is to be constructed at Hamamatsu City. The new station will house the telephone and telegraph service on the second floor, and the capacity of the yards will be doubled.

KIN-HAN BUYS SLEEPERS FROM MITSUI BUSSAN KAISHA.—The Peking-Hankow railway board has ordered 100,000 sleepers from Mitsui Bussan Kaisha.

SHIMONOSEKI-MOJI SUBMARINE RAILWAY TUNNEL.—The survey of the Shimonoseki-Moji submarine railway tunnel is estimated to cost Y.1,800,000 and will take a year to complete. The tunnel will be six miles long and will cost 25 million yen. The survey work has already been commenced.

CONTRACT SIGNED FOR TSING-MAN RAILWAY, HONAN.—A loan contract with the Peking Syndicate, Peking, for the purchase of 200 freight cars for use on the Tsing-Man railway (branch line of Tao-tsing railway, Honan) has been signed by the Chinese ministers of communications and finance.

NEW ZEALAND RAILWAY ELECTRIFICATION.—The Zealand government has accepted the tender of the English Electric Company for the Arthur's Pass electrical section of the main line railway. The progress of this railway electrification will be watched with interest by engineers, as it presents points of unusual technical difficulty. The section includes a tunnel 5½ miles in length through the mountains, and the steepest gradient is one in thirty.

RAILWAY WORK FOR FAMINE LABOR.—A wealthy resident of Shensi, Mr. Hung Po-lu, has offered to provide the necessary funds for the construction of the Tungkuan-Fenghsiangfu section of the Lunghai railway, with famine labor. The offer is being considered by the director of the Lunghai Railway.

RAILWAY CONSTRUCTION, HOKKAIDO.—The 1921 plans for new railway construction in Hokkaido cover about 300 miles and it is expected that work will be pushed on the Nissho line first.

SHAREHOLDERS' MEETING OF C.E.R.—The following agreements were reached at the recent a meeting of shareholders of the Chinese Eastern Railway:—(1) "That the management of shares of China and Russia and the distribution of the privileges among the other small shareholders should be transacted according to the decisions made by the last meeting of the Russo-Asiatic Bank, and all the necessary progressive measures be discussed by the following meeting of Directors; (2) that the number of engineers, technologists, etc., supplied by China, Japan, Russia and America, should be in proportion to the share capital the said governments have respectively invested in this railway; and (3) that the other measures of transportation and finance should be carried out one by one in the near future."

GOVERNMENT FINANCE

JAPANESE BONDS ISSUED IN FRANCE.—Japanese bonds issued abroad have been imported in increased quantities imports exceeding exports to the extent of Y.20,000,000 on an average for the past few years. The 4 per cent. issues in France are most favored and have advanced to more than 1,300 francs against their face value of 1,000 francs. They are calculated to yield an actual interest of 8.7 per cent., when their market price is 1,330 francs and the exchange rate between Japan and France 7.47 francs. They are considered, therefore, a good investment not only by bankers, but by traders who prefer them to cash in the settlement of their accounts with the French buyers.

JAPAN'S NEXT BUDGET.—Departmental estimates for the next fiscal year total about 1,800 million yen, being 500 million yen more than the current budget. The natural increase of revenue will not be as large as originally expected, and the increase of surplus available for the next fiscal year will not exceed 150 million yen. Recourse may be had to increased taxation. Meanwhile, the finance minister has been persistently urging a general retrenchment of the departmental estimates, and demanding that their new bills be curtailed by from 80 to 90 (?) per cent. Viscount Takahashi is also said to have explained to Admiral Saito, governor-general of Korea, that the government could not give such an enormous credit to Korea as he is reported by the papers to have been demanding.

PEKING GOVERNMENT NEEDS $30,000,000—AND HAS NOWHERE TO GET IT!—According to information from the ministry of finance, the Peking government is placed in a very difficult situation, since no sufficient funds are available to tide over the difficulties of the coming new year. Foreign loans cannot be obtained, since foreigners begin to collect Chinese National and Domestic Bonds on an extensive scale owing to the great amount of interest attached to such bonds. New National Bonds do not attract much attention from the public and the market is therefore very unpromising. The first year bonds are sold in Peking at the rate of 414 whilst those in Shanghai fetched only $19. There are only a few millions of bonds in the ministry. The special funds promised by the various Provinces do not come in yet. No great reliance can be placed upon the Customs and Salt Surplus. The smallest amount which is required by the central government to pass the coming new year is in the neighborhood of $30,000,000.—Peking Correspondence.

COINS IN VLADIVOSTOK.—As the result of the last order whereby post and telegraph offices were instructed to accept only money in the form of coins, large numbers of Russian gold, silver and copper coins are being received in these institutions. Big silver coins, such as the one-rouble coin, the half-rouble and the quarter-rouble, are received at the rate of value of gold coins, while copper money is received at the rate of silver change.

JAPAN'S SPECIE HOLDINGS CONTINUE TO INCREASE.—The amount of specie held by the Japanese government and the Bank of Japan both in Japanese and foreign markets on October 15 reached Y.2,052,000,000, this being a remarkable increase of Y.25,000,000 on the figure that obtained on the 1st of the same month. The figure is only second to the highest mark reached in December last year when the amount was Y.2,057,000,000. The reason for this conspicuous increase is due to the increase of specie brought home from abroad by the exchange banks, viewed from the existing condition of the foreign exchange business the increase is likely to continue for some time yet. The figure on October 15 is apportioned as follows:—

	Amount on Oct. 15	Increase on the previous figure
Held by Government	887 million yen	1 million yen
Held by the Bank of Japan ..	1,165 million yen	24 million yen
Total	2,052 million yen	25 million yen
Held in Japan ..	904 million yen	28 million yen
Held abroad ..	1,148 million yen	3 million yen (dec.)
Total ..	2,052 million yen	25 million yen

MILLION DOLLAR LOAN FOR CANTON GOVERNMENT: SALT REVENUE AS SECURITY.—The leading merchants and citizens of Canton, meeting at the General Chamber of Commerce rooms on November 9, decided to raise a loan of $1,000,000 for the Kwantung government. Before the decision, Commissioner Liao Chung-hai, of the bureau of finance, gave a description of the needs of the Cantonese army. The loan shall be raised in the following terms:—(1) a sum of $1,000,000 at an interest of 8 per cent. annually shall be raised without delay; (2) forty per cent. of the loan shall be repaid at the end of four months, the rest to be repaid thirty per cent. at the end of each three subsequent months with interest, full payment within a year from date of the loan, at the latest; (3) the salt revenue shall be offered as security for the loan; and that the General Chamber of Commerce shall be agent to undertake the loan. Financial bureau issuing notes that will be accepted as legal tender for the payment of tax and other public dues.

FRENCH LOAN REWRITTEN.—The French treasury loan amounting to Y.30,342,000 which was issued in Tokyo in August last year and was taken up by the deposit department of the Japanese government treasury, was rewritten October 26, the day of maturity, on the same conditions, i.e., for one year at 8.5 per cent. interest including 1 per cent. commission. The notes were entirely taken up by a few influential banks in Tokyo and Osaka.

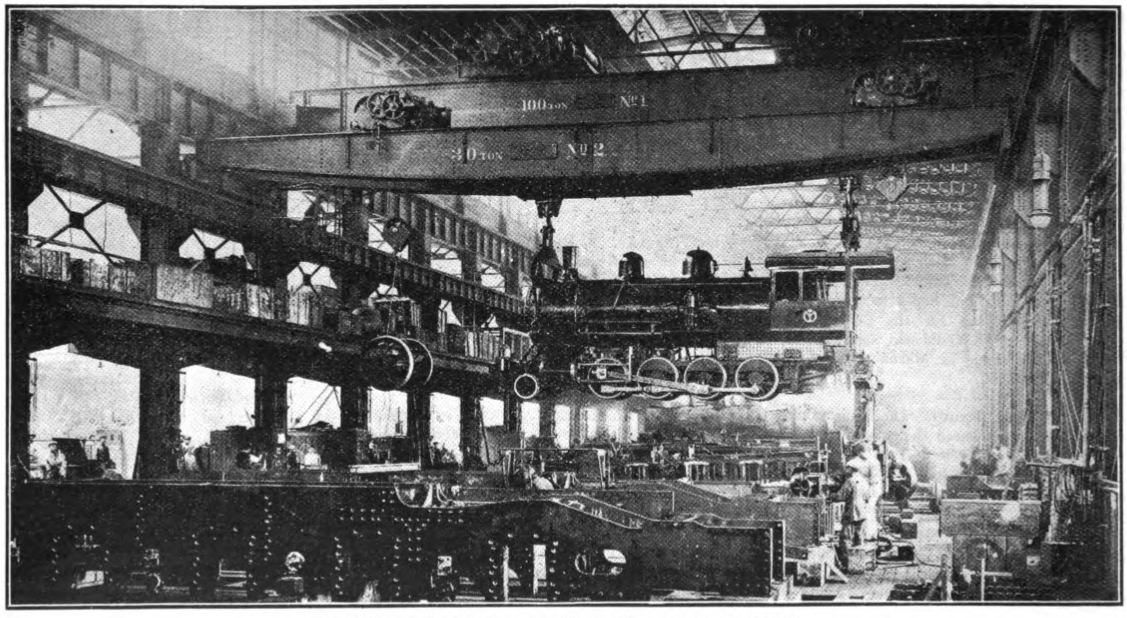
NEW PHILIPPINE CURRENCY LAW.—The Philippine senate has adopted without debate the amendment of Senator Guanco to the currency law, which is intended to solve the present currency stringency and exchange situation in the Philippines. Among the most important provisions of the bill is the fixing of the reserve funds of the government at not less than 60 per cent. of the nominal value of the treasury certificates in circulation, until the total circulation has reached P.120,000,000. The bill also authorizes the government to pay a premium on all exchange bought in New York.

CALCUTTA RAISING LOCAL LOAN.—The Calcutta Corporation has requested the Indian government

SOUTH MANCHURIA RAILWAY

RAILWAY

SHAKAKO WORKSHOPS



Interior of Engine Erecting Shop, Shakako Shops, S.M.R.

LARGEST AND MOST COMPLETE IN ALL MANCHURIA AND CHINA

AREA OF LAND: About 300,000 Tsubo. OFFICES & WORKSHOPS, 14,000 Tsubo

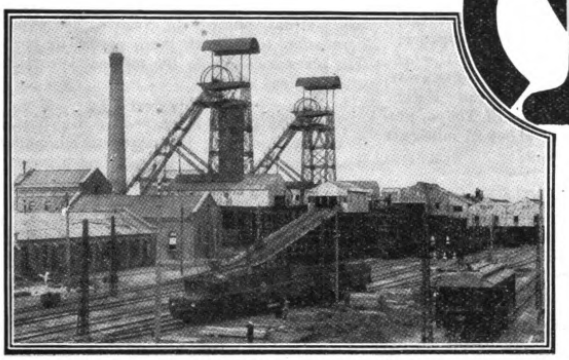
CAPACITY OF EXECUTING REPAIRS SIMULTANEOUSLY:

27 Locomotives, 36 Passenger Cars, and 130 Freight Cars, besides Constructing and Repairing other Railway Materials, Mining Machinery, etc. Employees: 5,000 Japanese and Chinese.

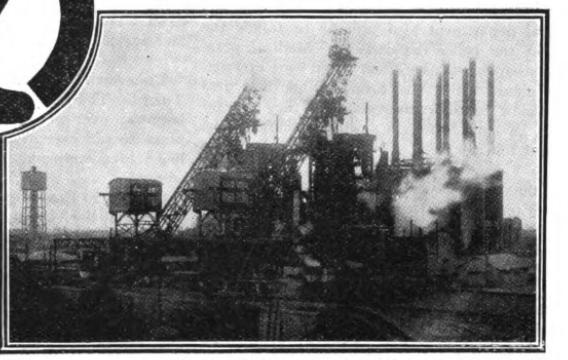
THE EAST IS EAST AND THE WEST IS WEST

SOUTH MANCHURIA RAILWAY

COAL IRON



Togo Pit of the S.M.R. Fushun Collieries



Anshan Steel Works of the S.M.R.

FUSHUN COAL

The Best Steaming Coal in the Far East | Fresh Stocks Always on Hand

Depots:

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	Tientsin	Tsingtao

Agencies:

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Sourabaya	Yokohama	Moji
Singapore	South Seas	Saigon
Penang	Niigata	etc.

Also Sulphate of Ammonia, Fire Clay, and Talc

Pamphlets and Particulars gratis from any of the above Depôts and Agencies, and from the

MINING DEPARTMENT,
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ANZAN IRON & STEEL WORKS

New Enterprise Set Up Like Magic Amidst the Wilderness of Manchuria.

TRACT OF LAND: about 4,000,000 tsubo.

BLAST FURNACE No. 1 (with a capacity for about 350 tons per day) Opened to service on April 29, 1919.

BLAST FURNACE No. 2 (with a capacity for about 350 tons per day) Made ready for service on February 24, 1920.

MEANS OF TRANSPORTATION in the plant: 24 miles of railway and 2.5 miles of electric tramway in operation, with three light locomotives and a number of slag-, coke, and ore-cars of from 8 to 24 tons.

A NEW TOWN SITE of 400,000 tsubo, with the necessary roads and water and sewage services, laid out and rented to lessees.

OFFICIALS AND EMPLOYEES: 2,300 Japanese and Chinese.

BUT THE TWAIN HAS MET AND BLENDED HERE